BLACK SESAME TECHNOLOGIES

Stock Code: 2533.HK

Global On-Device AI Inference Chip Provider

BEST TECH · BEST LIFE



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Stock Code: 2533.HK

BLACK SESAME TECHNOLOGIES

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BLACK SESAME TECHNOLOGIES

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Black Sesame Technologies

Black Sesame Technologies Co., Ltd. is committed to becoming the strongest chip platform solution provider in on-device AI inference.Founded in 2016, Black Sesame Technologies has listed on the main board of the Hong Kong Stock Exchange since 2024, under stock code 2533.HK. Focused on intelligent driving as its core strategic focus, the Company has strategically expanded into embodied AI and general AI, facilitating the large-scale deployment of on-device AI computing across a wider range of physical scenarios.

As a pioneer in intelligent vehicle computing chips, Black Sesame Technologies has established a comprehensive product portfolio: the Huashan series focuses on autonomous driving, while the Wudang series is dedicated to cross-domain fusion. Through its extensive chip product lines, the company addresses diverse and sophisticated demands for advanced functionalities in smart vehicles, providing critical mission-capable solutions for areas such as ADAS, smart cockpit, advanced imaging and interconnection. Leveraging the Company's self-developed IP cores, algorithms, and supporting software, Black Sesame Technologies delivers full-stack autonomous driving capabilities via its SoCs and SoC-based solutions to meet a wide range of customer needs.

In the passenger vehicle market, the company has built deep partnerships with industry leaders including BYD, Geely, Dongfeng, FAW, SAIC, Bosch, Aptiv, Continental, and Desay SV. In the commercial vehicle sector, the company has developed a differentiated and innovative business model, collaborating with Chery, Shacman, and others, while actively advancing the mass production of more projects.

In 2025, the company strategically expanded into the field of embodied intelligence, launching the SesameX multi-dimensional embodied intelligence computing platform for commercial robot deployment and constructing a “whole-brain system for robots” At the same time, leveraging its flexible hardware and software architecture, Black Sesame Technologies deploys AI computing chips in general AI domains such as industrial, commercial, intelligent transportation, low-altitude flight, intelligent shipping, agriculture, and security, providing hardware and accompanying algorithms.

Leveraging its deep technological expertise and sustained investment in innovation, Black Sesame Technologies, as a leading enterprise in Hubei Province’ s AI industry chain and a National-level Specialized, Sophisticated, Distinctive, and Innovative “Little Giant” Enterprises, has been named among the 2025 Hurun China Artificial Intelligence Top 50 and the 2025 Forbes China AI Technology Enterprises Top 50.
To date, Black Sesame Technologies has won nearly 200 prestigious industry and media awards. These include being named among the 50 Smartest Companies by MIT Technology Review, multiple China Chip Annual Major Innovation Awards, and the Global New Energy Automotive Cutting-Edge & Innovative Technology Award, among others, earning wide recognition across the industry.



01 Intelligent Vehicle

As a leader in Automotive Intelligent Computing SoCs, Black Sesame Technologies offers two complete product lines: the Huashan Series and the Wudang Series. The Huashan Series ranges from the mass-production-proven A1000 high-compute platform to the A2000 chip, which delivers the highest computing power among domestic open platforms, comprehensively covering autonomous driving needs. The Wudang C1200 family is the first domestically mass-produced cockpit&driving integrated chip platform. It integrates mission-critical capabilities such as autonomous driving, intelligent cockpit, and body control. Leveraging its self-developed IP cores, algorithms, and full-stack solutions, the company meets the increasingly diverse and complex demands of the intelligent vehicle industry, helping customers achieve safe and efficient deployment of intelligent driving.





02 Embodied AI

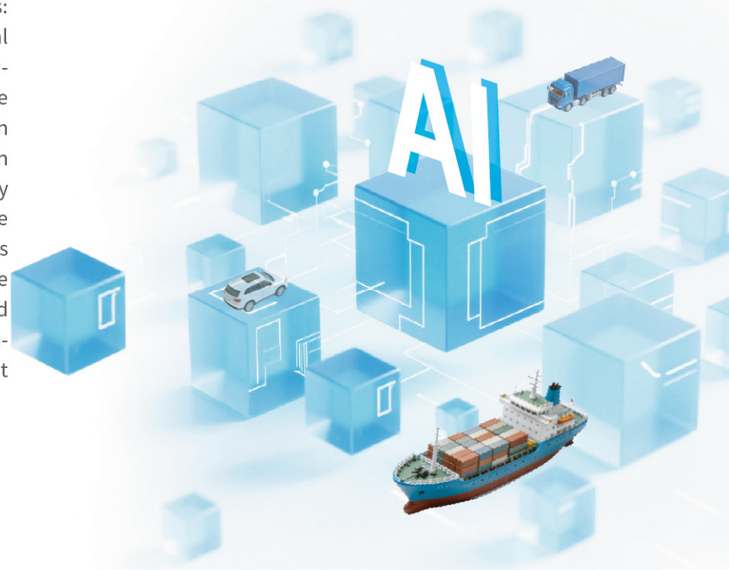
The SesameX Multi-dimensional Embodied Intelligence Computing Platform, launched by Black Sesame Technologies, is built around the core concepts of "whole-brain intelligence and multi-dimensional computing," making it the ideal partner for the commercial deployment of robots. The platform offers three core modules: Kalos, a dedicated platform for commercial service robots — the most mature and cost-effective robotic central brain; Aura, a general-purpose computing platform for multi-task execution robots — the most agile and reliable "action brain" for robots; and Liora, a full-capability computing platform for embodied AI brains — the fastest and most secure "thinking brain." With its full-stack, self-developed hardware and software architecture, the platform accelerates the rapid commercialization of applications such as humanoid robots, multi-legged robots, and intelligent robotic arms.

03 General AI

Black Sesame Technologies has built a General AI full-scenario intelligent computing platform. Leveraging a flexible hardware and software architecture, the company deploys its AI computing power chips across a wide range of fields, including industrial, commercial, intelligent transportation, low-altitude flight, intelligent shipping, agriculture, security, and more. The platform supports flexible deployment and cross-scenario coverage, empowering the intelligent transformation of thousands of industries. With years of deep cultivation in the AI imaging field, the company' s solutions have been adopted in over 500 million devices, making it one of the top three global suppliers. Its mature technology and scalable capabilities provide a strong base for General AI applications.







Company History of Mass Production

2016

Jul. Company founded

2018

Mar. Entered into global strategic cooperation agreement with **Bosch**

2019

Nov. Entered into strategic cooperation agreement with **FAW Group** to accelerate intelligent driving commercialization

2020

Jun. Launched **Huashan A1000** and **Huashan A1000L**

Oct. Launched autonomous driving solutions and V2X solution

2021

Sep. Entered into strategic cooperation with **JAC Motors** to develop vehicle-level autonomous driving chips and visual perception algorithms

2022

Sep. Awarded project with **Utopilot** on L4 AGV and heavy truck models

Dec. Announced joint collaboration with **Dongfeng Motor** to deploy Huashan A1000 SoCs on its first all-electric sedan and SUV models

Reached a commercial vehicle platform-level strategic cooperation with SANY

2023

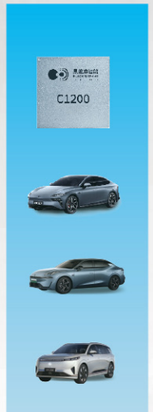
Apr. Announced **the industry' s first cross-domain computing platform** for intelligent vehicles , **Wudang Series,** achieving four-domain with single chip

May. Announced joint collaboration with **FAW Group** to deploy Huashan A1000L on the **Hongqi models**

Aug. The GEELY – **LYNK & CO 08** with Huashan A1000 start to sell

Iveco Olsson equipped with Huashan A1000 are mass-produced







2024

Mar. **Dongfeng eπ007** with Huashan A1000 started to sell

May. **LYNK&CO 07EM-P** with Huashan A1000 started to sell

Jun. **Dongfeng eπ008** with Huashan A1000 started to sell

Aug. **Officially listed on the main board of the HKEX**

Sep. Signed a technical cooperation framework agreement with Dongfeng Motor to deepen cooperation

Dec. **Launched Huashan A2000 family chips**

2025

Jan. Entered into global strategic cooperation agreement with **Continental**

Feb. Awarded project with **FAW Group** on Huashan A1000

Mar. **Geely Galaxy E8, Galaxy Xingyao 8** with Huashan A1000 started to sell

Apr. **Launched "Safety Intelligent Platform"** based on **Wudang C1200 family chip**

Awarded project with **Dongfeng Motor** on Wudang C1296

2026

Jan. Announced strategic collaboration with **Lenovo Research Robotics Lab**

Completed strategic acquisition of **EeazyTech**

Huashan A2000 chip passes US review, officially launched globally

Announced a strategic cooperation with **Qingdao COSCO Shipping Digital Intelligence Technology Co., Ltd.**

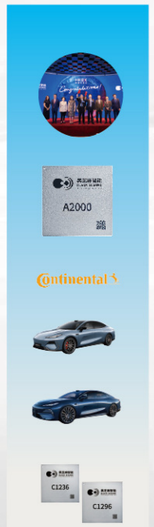
Announced a strategic cooperation with **Apollo Go**

Feb. Awarded project with **AICC** for a mass-production solution based on the Huashan A2000 chip

Mar. **Dongfeng eπ007** Flash Edition with Huashan A1000 started to sell

Apr. Reached a platform-level cooperation with Dongfeng TIANYUAN Intelligent Cockpit Plus, making the Wudang C1296 the **first domestically mass-produced cockpit-driving integrated chip**

Entered into strategic cooperation with **Ontime**





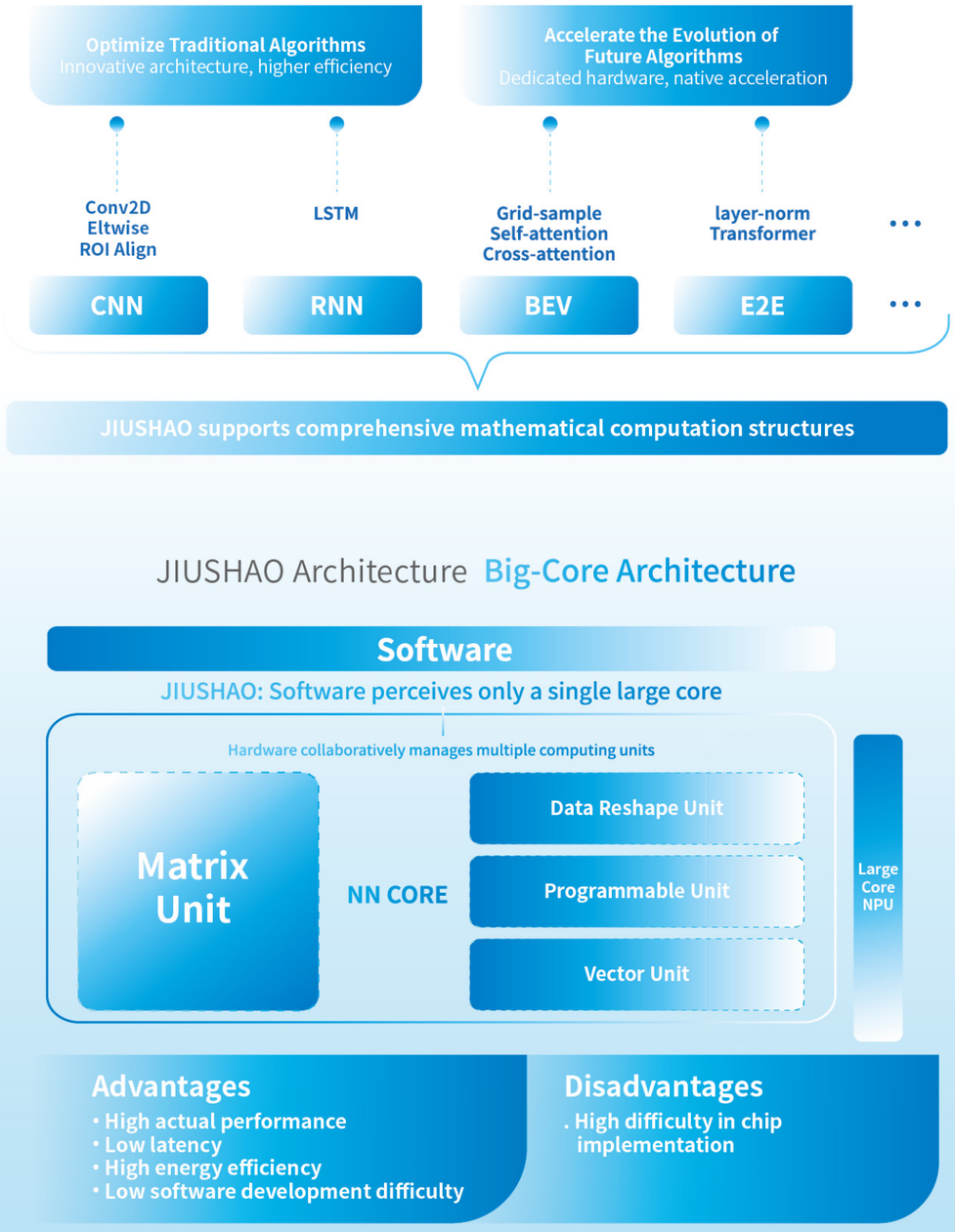
IP Core

Black Sesame Technologies has self-developed three core technologies to address the core computing and perception requirements of autonomous driving: Black Sesame Technologies Architecture Automotive-grade JIUSHAO NPU , Black Sesame Technologies XINGMOU ISP, and Black Sesame Technologies Shanhai development toolchain. The NPU delivers efficient and flexible neural network acceleration capabilities, the ISP ensures high-quality image processing under extreme lighting conditions, and the toolchain provides full-process support from model training to chip deployment. Working in synergy, these three technologies form a high-performance, low-power, and easy-to-develop autonomous driving computing platform.

Black Sesame Technologies JIUSHAO

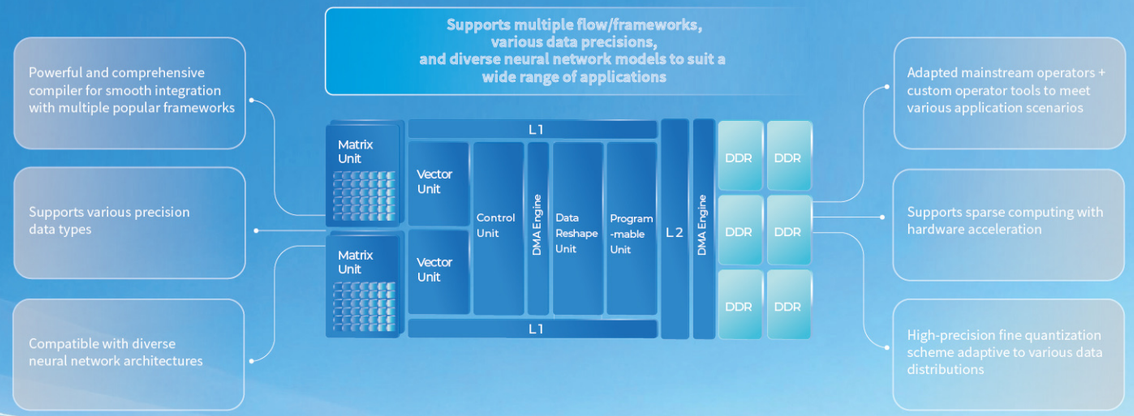
Proprietary Automotive Low Power Neural Network Accelerator NPU

JIUSHAO Architecture **Future-Oriented**



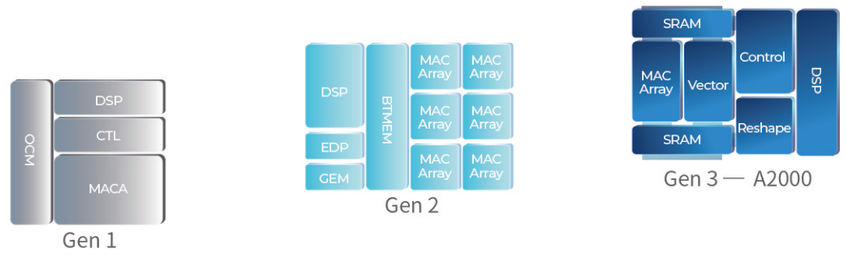
JIUSHAO Architecture **Big-Core Architecture**

JIUSHAO Architecture **Flexible Expansion**



JIUSHAO Architecture **New Level of Safety**

High reliability based on 3 generations of evolution and mass-production experience



Shanhai Toolchain

Safety NPU supporting redundancy checks

- Symmetric design supporting redundancy check of computation results
- Support for ECC hardware verification
- Built-in high-safety real-time firmware
- Priority preemption with deterministic latency
- MBIST / LBIST
- Comprehensive fault reporting mechanism
- Dedicated safety communication channel

Black Sesame Technologies XINGMOU

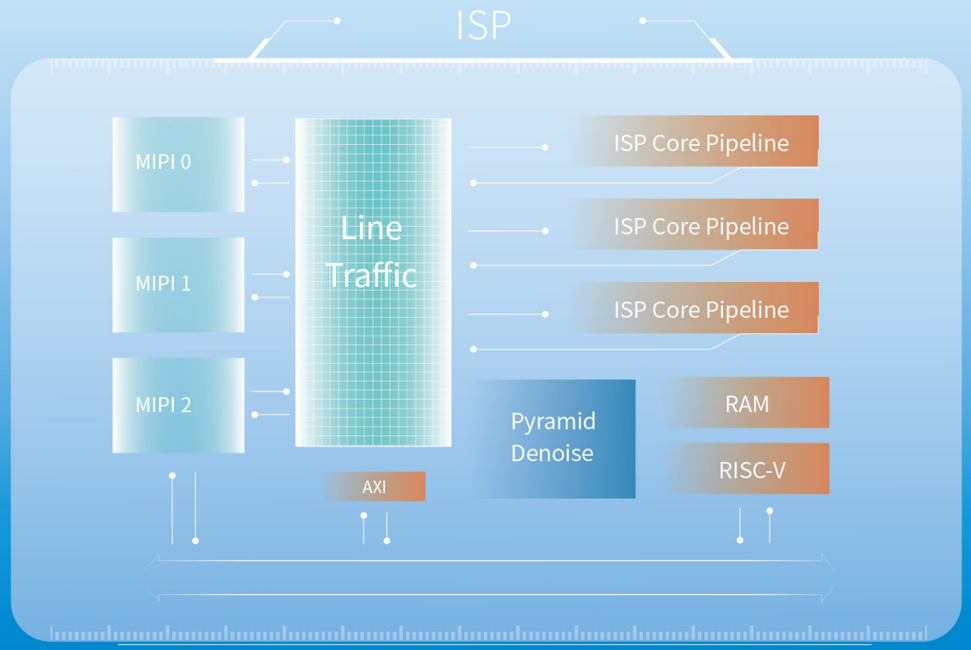
Proprietary Automotive Image Processing Core ISP

Multi-mode processing at high speed

Up to 16 HD camera inputs, multi ISP channels withprocessing capability at 3.6 billion 3-exposure ppsand 1.2 billion single-exposure pps. Each channelsupports multi-video online processing concurrently-and supports online, offline or mix process-ingmodes.

High quality image processing

Support HDR processing which meets high qualityautomotive image processing require-ments of highdynamic exposure, low-light noise reduction, andsuppression of LED flash, which is applicable todifferent autono-mous driving applications



Features:

30Gbps, 16 channels camera, 1.2 billions pps

Multi cameras, high transmission rate, high processing rate, low latency

High dynamic image processing

Multi sensor formats

Image pre-processing ISP

Completely self-developed ISP algorithms and multi platform implementations

Perfect performance even in extreme light condition

Reflection in rainy night/Extremefoggy/Backlight

Image processing examples:

Low light, high dynamic range

140dB

1080P 2-3Exp

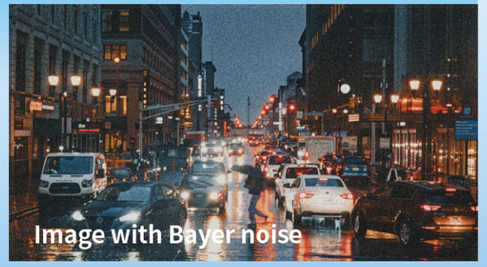
lux (night flash)(Super low light)

Suppression of LED flash

Comparison of imaging performance

Black Sesame Technologies ← VS → Other Manufacturer

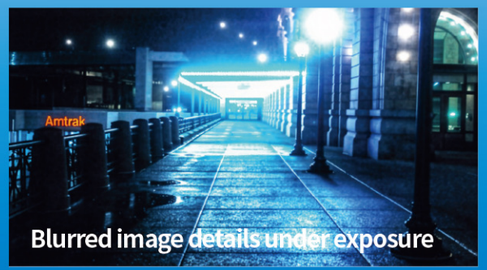












Black Sesame Technologies

Shanhai Development Toolchain

Auto Optimization × Agile Development

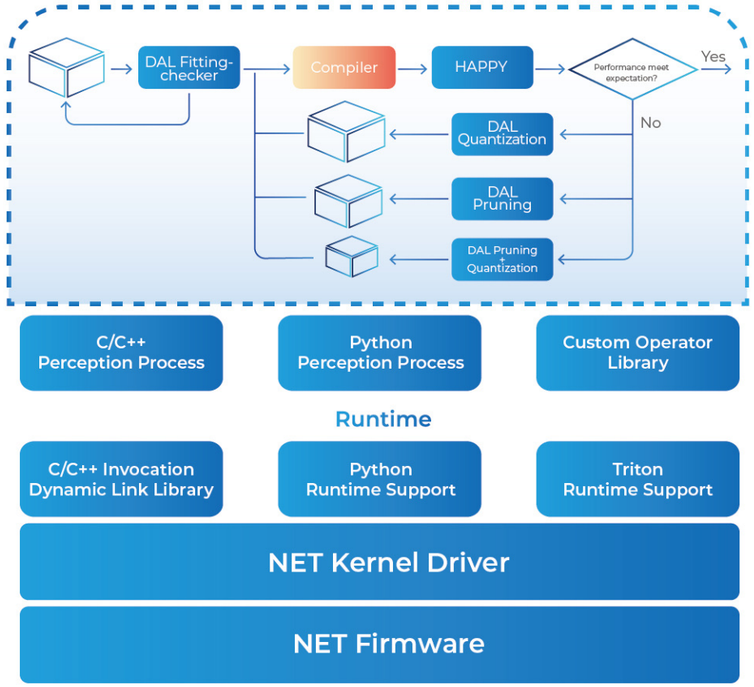
The platform supports Tensorflow, Pytorch,and ONNX frameoworks, and dynamic task scheduling for heterogeneous multicores. It provides an algorithm compiler for optimization with target Black Sesame Technologies hardware backends and supports customized operator development.

High Precision Model Quantization

It supports post-training quantization offloating-point algorithm models, as well asquantization-aware training(QAT) to ensurethe precision of algorithm models.

Multi Models × Easy to Use

It has over 50 algorithm models in its Mode; Zoo and transfer learning models, which facilitates our customers in rapid development and deployment of intelligent algorithms. A complete toolchain SDK and application support help our customer sdeploy optimized models with ease.



MLIR

Model Compiler uses the industry-standard MLIRframe-work,supporting the conversion of models fromONNX, PyTorch, TensorFlow, etc.

API

Native compatibility with PyTorch's inference API support-ing Pythonprogramming and deployment.

Supports custom operator programming in Python with Triton,automatically compiling to hardware-acceleratedcode.

Shanhai Development Toolchain

Extensibility

Supporting Tensorflow, Pytorch, and ONNX frameworks

High precision

Supporting post-training quantization of algorithm models, as well asquantization-aware training (QAT) to ensure the precision of algorithmmodels

Completeness

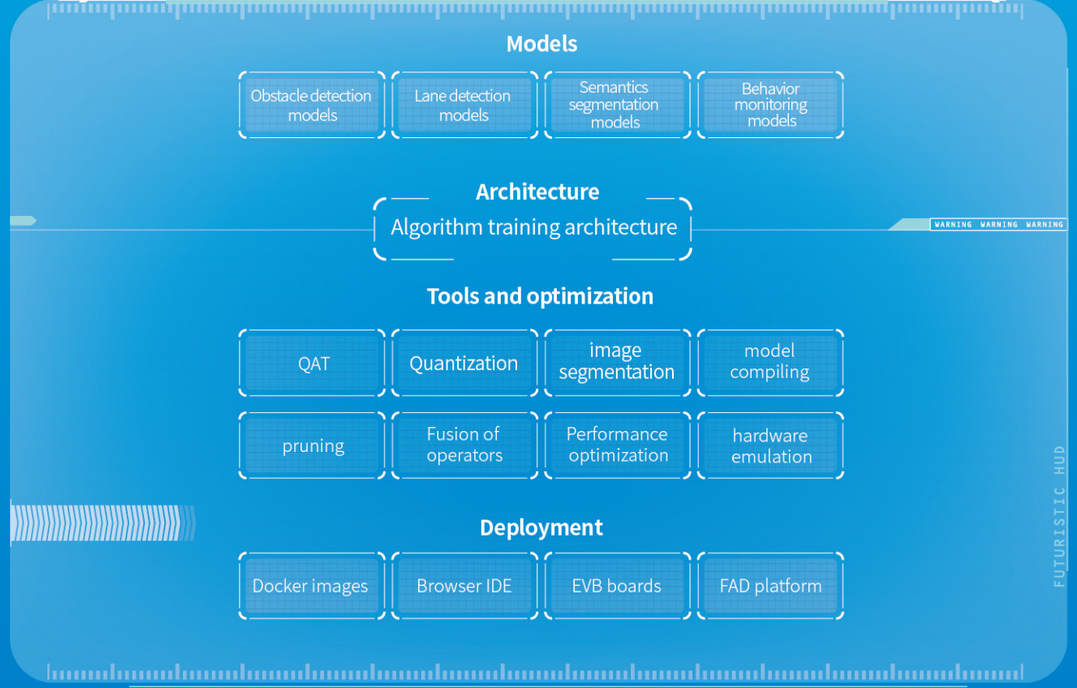
Equipped with NN models in its Model Zoo and deep learning models, whichprovides instructions to customers for easily and rapidly developing anddeploying algorithms

A complete toolchain SDK and application support help customers deployoptimized models with ease

Flexibility

Flexible deployment with docker images

Architecture of Shanhai development toolchain



Core products

Black Sesame Technologies has built a complete core product portfolio: Huashan Series are dedicated to autonomous driving. Within this series, Huashan A1000 Family, featuring high cost-effectiveness and mature mass-production validation, covers L2 to L2+ autonomous driving and has been widely deployed across multiple production vehicle models. The Huashan A2000 Family targets high-level autonomous driving, supporting L2+ to L4 full-scenario capabilities. The Wudang Series focuses on cross-domain computing, with a single chip capable of simultaneously supporting multiple domains including autonomous driving, intelligent cockpit, and body control. The SOM Core Compute Board modularizes the chip’ s capabilities, delivering plug-and-play high-performance core modules for robotics, edge computing and other scenarios, shortening product development cycles. From basic to high-level autonomous driving, from single-domain control to cross-domain fusion, and then to modular solutions, Black Sesame Technologies empowers intelligent mobility with its complete product spectrum.

Black Sesame Technologies Huashan A2000 Family

Next-generation High-computing Chip Platform Purpose-built for Physical AI

High safety & Reliability
Supports redundancy-based Safety NPU

Full-link Floating-point Support
Supports FP8/FP16/INT4 Mixed Precision

Dedicated Transformer Hardware Acceleration Module & Sparse Acceleration

Comprehensive Product Portfolio Coverage
From NOA to Robotaxi

A2000

The most advanced NPU architecture in the industry

Ultra-high Integration Level
6-in-one: CPU+DSP+GPU+NPU+MCU+ISP/CV

New Generation ISP
4-Frame Exposure, 150dB HDR

Single-Chip Data Closed-Loop Self-Developed High-Performance RISC-V Scheduling Core

Flexible Scalability
Supports multi-chip scalability



Industry-leading JIUSHAO NPU core

Highest efficiency
Lower power consumption at same computing power, with no accuracy drop

Highest throughput
Run faster with higher bandwidth

Highest-performance XINGMOU ISP: All-weather, full-chain, full-sensing – self-developed industry-leading technologies

All-weather + Full-scene coverage
3.6 Gbps

Ultra-high-resolution brightness + Extreme SNR
150 dB, 3DNR

Lossless direct-through + More accurate perception
RAW format direct-through to NPU

Built for the future: fully supporting VLA × World Model

Reserving "future interfaces" for L3/L4 autonomous driving

Advanced model support
Native acceleration, direct deployment of VLA / World Models

High scalability
High-speed interconnect, compute stacking

Safety is the non-negotiable bottom line of intelligent driving

Core verification + hardware isolation + process certification – Three in one

Safety NPU
Integrated on-core verification ensures computational correctness

Unique "3L" design
Chip-level isolation – freedom from interference even under extreme conditions

Safety process assurance
Full-process automotive-grade certification complete coverage, no blind spots

Highly efficient and easy-to-use Shanhai Toolchain: From prototype to mass production – deploy quickly and stay ahead

Ultra-fast compilation capability
Minute-level compilation – less waiting during iterate

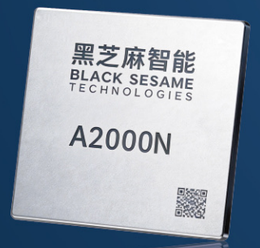
Flexible operator development
Support Triton to accelerate operator development

Ease-of-use design
Ready to use, clear at a glance



The All-New Huashan A2000 Family

A2000N



The Cockpit AI-Enabled Chip

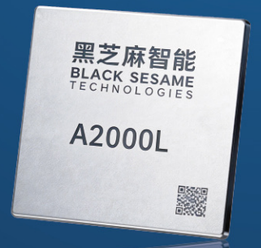
High-Performance Large Model Inference

Cockpit agent
Light urban NOA

- Equivalent computing power 200 TOPS
- Self-developed ISP 4-exposure / 150dB HDR / 3DNR
- Proprietary near-memory compute architecture
- Up to 176K DMIPS CPU compute power

Functional safety ASIL-D	Security EVITA full, OSCCA	Process node 7nm	NPU dedicated SRAM 8 TB/s	Self-developed RISC-V scheduling core Custom high-performance instructions
HD camera 16-channel input	Scene Reconstruction & 3D Rendering	Self-developed Vector Engine Superior exponential computing power	Rich automotive interfaces CAN-FD / 10GbE / PCIe 4.0	
Auto-grade Reliability Certification AEC-Q100		NPU dedicated cache Ultra-large capacity / Ultra-high bandwidth		

A2000L



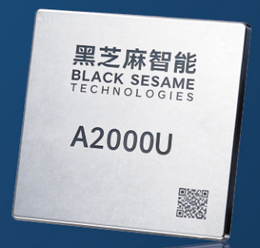
Cost-Effective Urban NOA Chip

Industry-Leading Cost-Performance Ratio

Cost-effective urban NOA
AI new paradigm-based assisted driving

- Equivalent computing power 400 TOPS
- Self-developed ISP 4-exposure / 150dB HDR / 3DNR
- Proprietary near-memory compute architecture
- Up to 264K DMIPS CPU compute power

A2000U



Full-scenario Knowledge-driven AD Chip

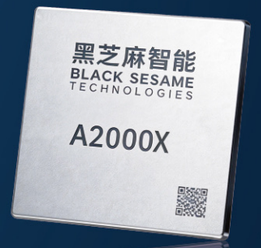
Next-Generation Computing Platform

L2+/L3 autonomous driving foundation
Assisted driving with world model integration

- Equivalent computing power 700 TOPS
- 30K+DMIPS ASILD computing power
- 317~352K DMIPS CPU compute power
- Self-developed ISP 4-exposure / 150dB HDR / 3DNR
- Proprietary near-memory compute architecture
- NPU dedicated SRAM 8 TB/s
- Self-developed Vector Engine Superior exponential computing power >4.8-5TFLOPS FP32 computing power
- Supports C2C chip-to-chip high-speed coherent interconnect
- NPU large-capacity cache Hundreds of MB

Codec 4K@60fps	Auto-grade Reliability Certification AEC-Q100	Self-developed RISC-V scheduling core Custom high-performance instructions	HD camera >24 channel input	Scene Reconstruction & 3D Rendering
Rich automotive interfaces CAN-FD / 10GbE / PCIe 4.0	Security EVITA full, OSCCA	Process node 7nm	Functional safety ASIL-D	

A2000X



High-End Full-scenario Knowledge-driven AD Chip

Flagship Computing Platform

L3/L4 autonomous driving
In-vehicle local AI agent

- Equivalent computing power 1000 TOPS
- 30K+DMIPS ASILD computing power
- 370~458K DMIPS CPU compute power
- Self-developed ISP 4-exposure / 150dB HDR / 3DNR
- Proprietary near-memory compute architecture
- NPU dedicated SRAM 8 TB/s
- Self-developed Vector Engine Superior exponential computing power >4.8-5TFLOPS FP32 computing power
- Supports C2C chip-to-chip high-speed coherent interconnect
- NPU large-capacity cache Hundreds of MB

Black Sesame Technologies Huashan A1000 Family

A1000

Automotive Grade High Performance AD Chip

Huashan A1000 is a high performance and low power consumption SoC of autonomous driving computing chip, embedded with dedicated high performance image sensing, real-time computer vision and neural network processor. Based on camera sensing and AI computing, the chip provides a tremendous sensor interfaces and supports L2+/L3 autonomous driving solutions.

A1000 is certified with ISO26262 ASIL-B Functional Safety and AEC-Q100 Grade-2 standard.



Specification

16nm FFC Automotive Process

8 Cores high-performance ARM Cortex A55 CPU@1.5GHz
- Multi-level caches
- TrustZone

Automotive Grade 64bit LPDDR4

Automotive Grade ISP Pipeline
- 16 channels HD camera input
- Support 8MP
- 3-exposure HDR, up to 140dB dynamic range
- Offline low-light denoising and LED flash suppression
- Mix of inline and offline processing mode

Computer Vision Processing Hardware Accelerator
- 5 cores high performance vision DSP
- CV Hardware acceleration
- H.264/H.265 video encoder and decoder for 4k video

Package

FCBGA 25mm*25mm, 0.8mm pitch

Operating Conditions

Environment -40°C ~ 105 °C

High Performance, High Energy-efficient NPU (For multiple channels camera access and high performance computing scenario usage)
- Hybrid precision 4-bit/8-bit MAC Array
- Perform up to 58 TOPS(INT8)
- Overall 80% utilization of convolution layers MAC Array.
- Sparse support for storage and acceleration.
- Int 8/16-bit, floating 16 bit GEMM and Nonlinear functions acceleration.
- Open-source DynamAI NN compiler tools

Function Safety and Information Security
- Verified by ISO26262 ASIL-B and AEC-Q100 Grade-2 standard
- Security MCU with dual-cores lockstep
- Real time security monitoring and inspection
- Embedded safety guard mechanism involving ECC, Parity
- Secure booting
- OTP on chip for Private-key storage and life-cycle management

Rich Peripheral Interfaces
- 1x PCIe Gen3 4L or 2x PCIe Gen3 2L, and can be managed as Root Complex or Endpoint port
- USB3.0 DRD and USB2.0 device
- 10/100/1000Mbps automotive grade Ethernet
- eMMC/SD
- CAN_FD
- UART, SPI, I2C, I2S, GPIO

Black Sesame Technologies Huashan A1000 Family

A1000L

Autonomous Driving Chip

Huashan A1000L is a medium-high performance and low power consumption SoC of autonomous driving perception chip, embedded with dedicated high performance image sensing, real-time computer vision and neural network processor. Based on camera sensing and AI computing, the chip provides a tremendous sensor interfaces and supports L2/L2+ autonomous driving solutions.

A1000L is certified with ISO26262 ASIL-B Functional Safety and AEC-Q100 Grade-2 standard.



Specification

16nm FFC Automotive Process
8 Cores High-performance ARM Cortex A55 CPU@1.2GHz
Automotive Grade 64-bit LPDDR4

Automotive Grade ISP Pipeline
- 8 channels HD camera input
- Support 8MP
- 3-exposure HDR, up to 140dB dynamic range
- Offline low-light denoising and LED flash suppression
- Mix of inline and offline processing mode

Computer Vision Processing Hardware Accelerator
- 3 cores high performance vision DSP
- CV Hardware acceleration
- H.264 video encoder and decoder for 4*720p video

Encapsulation

FCBGA 25mm*25mm, 0.8mm pitch

Working temperature

Environment-40°C ~ 105 °C

High performance、High energy-efficient NPU
- Hybrid precision 4-bit/8-bit MAC Array
- Perform up to 16 TOPS(INT8)
- Overall 80% utilization of convolution layers MAC Array.
- Sparse support for storage and acceleration.
- Open-source DynamAI NN compiler tools.

Function and Information Safety
- Chip approved by ISO 26262 ASIL-B and AEC-Q100 Grade-2 standard
- Security processor with dual-cores lockstep
- Real time security monitoring and inspection
- Embedded safety guard mechanism involving ECC, Parity
- Secure boot
- OTP on chip for Private-key storage and life-cycle management

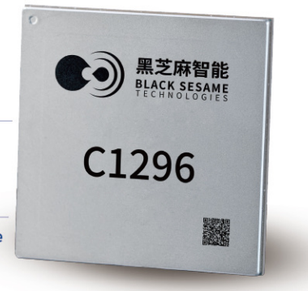
Vast Device API
- 4 channels PCIe Gen3 configurable for 1x4 or 2X2 permutations、and can be managed as Root Complex or Endpoint port
- USB3.0 DRD and USB2.0 device
- 10/100/1000Mbps automotive grade Ethernet
- eMMC/SD
- CAN_FD
- UART, SPI, I2C, I2S, GPIO

Black Sesame Technologies Wudang C1200 Family

C1296

The Industry's First Computing Chip to Support Multi-domain Fusion

Black Sesame Technologies Wudang C1296 is a high-performance, highly integrated on-board cross-domain computing chip. It is manufactured by 7nm auto-grade process, with built-in high-performance CPU, GPU, DSP and real-time processing capabilities. Its cross-domain architecture combines hard isolation and Hypevisor functions, based on proprietary IP cores: NPU and ISP.It provides a wealth of sensor interfaces, high and low speed body interfaces, various display output interfaces and ten Gigabit Ethernet interfaces, fully supports the cross-domain integration of smart cockpit, smart driving and gateway, and meets the needs of various stages of the evolution of the vehicle electronic and electrical architecture.



Specification

10 Cores High-performance ARM Cortex A78AE Automotive GradeCPU
- 5 times better than previous generation of performance
- DCLS supported, ASIL-D

The First High-performance ARM Automotive Grade GPU Mali G78AE
- 20 times better than previous generation of performance
- DCLS supported, ASIL-D

High Performance, High Energy-efficient NPU (For multiple channels camera access andhigh performance computing scenario usage)
- Hybrid precision 4-bit/8-bit MAC Array
- Overall 80% utilization of convolution layers MAC Array
- Sparse support for storage and acceleration
- Int 8/16-bit, floating 16 bit GEMM and Nonlinear functions acceleration
- Open-source and familized DynamAI NN compiler tools

High Performance Real-time Processing Capability
- Built-in high performance real-time processing computing power to 32KDMIPS (16DMIPS in DCLS)

Optimized Memory System Architecture
- Cache specifications that match high-performance CPU: 512KB L2 Cache, 2MB L3 Cache/Cluster
- Built-in 12MB super large SRAM space
- Automotive grade 64bit LPDDR5/LPDDR4X

Automotive Grade ISP Pipeline Enhanced Version
- 12 channels HD camera input
- More than 17MP camera input supported
- 3-exposure HDR, up to 140dB dynamic range
- Offline low-light denoising and LED flash suppression
- Support for RGB-IR Sensor added
- Processing 2.4G pixels per second

High performance HIFI5 DSP
- Latest generation Audio DSP
- Built-in NNE to speed up sound processing algorithms

Computer Vision Processing Hardware Accelerator
- 5 cores high performance vision DSP
- CV Hardware acceleration
- H.264/H.265 video encoder and decoder for 4k video

Rich interfaces of Automotive Grade Screen
- Rich interface types: 2xDSI, 2xLVDS, 1xDP/eDP
- Support 4K standard screen and long screen display
- Mutiple screen output supported

Built-in High-speed Switch Acceleration Module
- 2x10 GbE + 2x2.5 GE Line speed forwarding capability
- CAN-ETH high-speed switching capability

Separate PCIe 4.0 High-speed Port
- Support 2x2 Lane and 1x4 Lane configuration
- Without any Ethernet port occupation

Rich Peripheral Interfaces, Fully Compatible with New and Old Auto-grade regulations
- More than 20 CAN-FD supported
- More than 6 LIN interfaces supported
- Support FlesRay interface
- 2xUSB3.1 device
- eMMC/SD
- UFS3.1
- UART、SPI、I2C、I3C、I2S、TDM、GPIO

7nm Automotive Process

Soft and Hard Cross-domain Architecture and System Design
- Hard isolated MPU unit, low-cost implementation of cross-domain typical system solutions
- Combined with VMS, it flexibly meets the requirements of complex cross-domain scenarios

Package
- FCBGA 31*31 mm, 0.8 mm pitch
- Be compatible with C1200 family Pin2Pin

Operating Conditions
- Environment -40°C~105°C

Function Safety and Information Security
- Verified by IS026262 ASIL-B and AEC-Q100 Grade-2 standard
- CPU, GPU with dual-cores lockstep supported
- Real time security monitoring and inspection
- Embedded safety guard mechanism involving ECC, Parity
- EVITA-Full and OSCCA
- Secure booting
- OTP on chip for Private-keystorage and life-cycle management
- Multiple independent hardware encryption and decryption engines, dedicated hardware acceleration engines for secure communication

Black Sesame Technologies Wudang C1200 Family

C1236

The Single Autonomous Driving Chip to Support NOA Driving Function

Black Sesame Technologies Wudang C1236 is a high-performance, highly integrated on-board intelligent driving chip, manufactured by 7nm auto-grade technology. In addition to built-in high-performance CPU, GPU, DSP and real-time processing capabilities, it also integrates a 10-gigabit Ethernet-CAN interface line-speed forwarding module, with proprietary IP cores: NPU and ISP. It provides a wealth of sensor interfaces, high and low speed body interfaces, and 10 Gigabit Ethernet interfaces, etc., which can meet all the computing and data processing requirements of mainstream NOA scenarios through a single SoC.



Specification

8 Cores High-performance ARM Cortex A78AE Automotive GradeCPU
- 4 times better than previous generation of performance
- DCLS supported, ASIL-D

The First High-performance ARM Automotive Grade GPU Mali G78AE
- 10 times better than previous generation of performance
- DCLS supported, ASIL-D

High Performance, High Energy-efficient NPU (For multiple channels camera access andhigh performance computing scenario usage)
- Hybrid precision 4-bit/8-bit MAC Array
- Overall 80% utilization of convolution layers MAC Array
- Sparse support for storage and acceleration
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- 12 channels HD camera input
- More than 17MP camera input supported
- 3-exposure HDR, up to 140dB dynamic range
- Offline low-light denoising and LED flash suppression
- Support for RGB-IR Sensor added
- Processing 2.4G pixels per second

ComputerVision Processing Hardware Accelerator
- 5 cores high performance vision DSP
- CV Hardware acceleration
- H.264/H.265 video encoder and decoder for 4k video

Dual screen interface
- 2xDSI
- Support 4K standard screen and long screen display
- Dual screen output supported

Built-in High-speed Switch Acceleration Module
- 2x10 GbE + 2x2.5 GE Line speed forwarding capability
- CAN-ETH high-speed witching capability

Separate PCIe 4.0 High-speed Port
- Support 2x2 Lane and 1x4 Lane configuration
- Without any Ethernet port occupation

Rich Peripheral Interfaces, Fully Compatible with New and Old Auto-grade regulations
- More than 20 CAN-FD supported
- More than 6 LIN interfaces supported
- Support FlesRay interface
- 1xUSB3.1 device
- eMMC/SD
- UFS3.1
- UART、SPI、I2C、I3C、GPIO

7nm Automotive Process

Package
- FCBGA 31*31 mm, 0.8 mm pitch
- Be compatible with C1200 family Pin2Pin

Operating Conditions
- Environment -40°C~105°C

Function Safety and Information Security
- Verified by IS026262 ASIL-B and AEC-Q100 Grade-2 standard
- CPU, GPU with dual-cores lockstep supported
- Real time security monitoring and inspection
- Embedded safety guard mechanism involving ECC, Parity
- EVITA-Full and OSCCA
- Secure booting
- OTP on chip for Private-keystorage and life-cycle management
- Multiple independent hardware encryption and decryption engines, dedicated hardware acceleration engines for secure communication

Black Sesame Technologies

Huashan A2000 SOM

Core Computing Board

The Huashan A2000 SOM core computing board based on the Huashan A2000 family, fully covers the computing needs for all scenarios—from AI-powered cockpits to L4 Robotaxi—with systematic enhancements in safety, ease of use, and scalability. It provides developers in smart vehicles, robotics, and other fields with a high-performance, high-efficiency core platform, making it an ideal choice for accelerating the deployment and mass production of intelligent systems.



The Huashan A2000 SOM
core computing board

Automatic Cruise Control and Following:

High-performance AI computing & efficient data processing Self-developed "JiuShao" NPU, industry-leading ISP, and near-memory computing deliver ultra-high effective compute, 150dB HDR, and 8TB/s bandwidth.

Comprehensive safety & reliability

ASIL-D automotive safety achieved via "3L" functional safety isolation and SafetyNPU redundancy checking. Global sales permission obtained.

System integration & engineering efficiency

Supports parallel development (algorithm team tunes on SOM while hardware team designs baseboard), Triton automated operator compilation, and pin-compatible design for fast compute iteration (swap SOM without motherboard redesign). Shortens product cycles and lowers barriers.

Low-cost iteration & scalable design

Scalable core board design supports both desktop dev and automotive-grade interfaces, reducing peripheral replacement cost and system integration time.



Technical Specifications

CPU	16x ARM® Cortex®-A78AE
MCU	10-core ARM Cortex®-R52
GPU	2-core ARM Mali®-G78AE
NPU	BST Jiushao NPU
ISP	BST AI ISP
DSP	2x Vision Q8 DSP
Memory	24G LPDDR5 up to 6400Mbps(up to 96GB)
Storage	NorFLASH 512MB
	UFS 128G
	EMMC 64GB

Black Sesame Technologies
Huashan A1000 SOM Core Computing Board

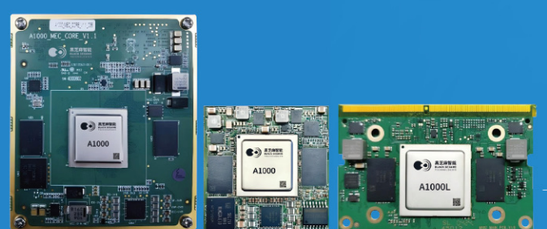
Huashan SOM Core Computing Board is developed based on the Black Sesame Technologies Huashan A1000 Series chip.

It integrates CPU, GPU, NPU, DSP, memory, power management, and a rich set of I/O interfaces.

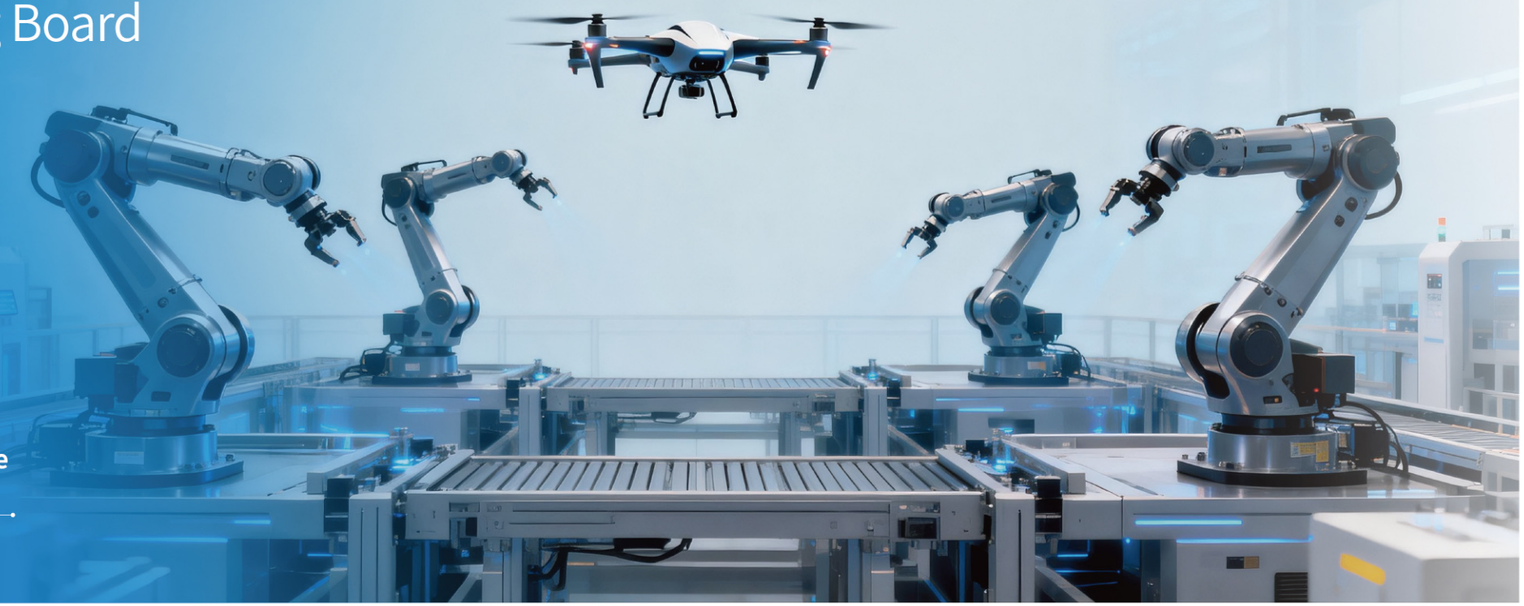
The A1000 SOM is suitable for applications requiring high reliability and high safety, enabling customers to quickly develop complete products tailored to their scenarios.

It comes with a built-in Linux operating system and low-level peripheral drivers, supporting user secondary development.

The A1000 SOM complies with AEC-Q100 Grade 2 and ISO 26262 ASIL-B, and its safety island design meets ISO 26262 ASIL-D.



Huashan SOM Core Computing Board



Advantages of Huashan SOM Core Computing Board

Leveraging Black Sesame Technologies Shanhai Development Toolchain,
customers can easily create end-to-end AI robot applications for areas such as smart factories, intelligent mobility, smart cities, and intelligent security.







Technical Specifications

Number	Module	Specification
1	CPU	8-core ARM Cortex-A55, up to 1.5GHz maximum frequency
2	Memories	64-bit LPDDR4 Memory Interface, up to 3200MHz maximum frequency
3	External Storage	eMMC/SD
4	NN Performance	58TOPS
5	CV Performance	5-core 800MHz DSP + Hardware Acceleration
6	Camera	16-channel HD Camera Input, 8MP Resolution Support
7	ISP	1.2Gpps High-Dynamic Image Processing, up to 140dB Dynamic Range
8	Ethernet	2*Auto GigE, TSN and QoS Support, Configurable as MII/RGMII/GMII Interfaces
9	PCIe	4-lane PCIe Gen3, Configurable as 1*4 or 2*2, RC/EP Mode Support
10	Peripheral Interfaces	6*SPI, 4*UART, 2*CAN-FD, 4*I2C, 2*I2S, 2*USB, GPIO
11	Safety	400MHz Dual-core Lockstep ARM Cortex-R5, AEC-Q100 Grade 2, ISO 26262 ASIL-B, Safety Island
12	Video Encoding	HW H.264/265,4k@60fps
13	Video Output	24-bit RGB Parallel Output, up to 1080p@60fps
14	Power Consumption	<18W (AI NET)
15	Sensors	GNSS/IMU, Camera, MMW Radar, USR, LiDAR
16	Process Node	16nm FFC Automotive-grade Process

Black Sesame Technologies
Wudang C1200 SOM Core Computing Board

The Wudang SOM Core Computing Board is built on Black Sesame Technologies Wudang C1200 family of cross-domain computing SoCs. Integrating high performance, high reliability and high integration, it is an embedded AI computing platform for cutting-edge verticals including intelligent vehicles, intelligent robotics, edge computing and industrial automation.

This board integrates CPU, GPU, NPU, ISP, DSP, memory, power management and a rich set of I/O interfaces. Featuring multi-OS compatibility, it supports simultaneous operation of Linux, Android, RTOS and other operating systems, enabling flexible deployment in complex cross-domain scenarios.

The SoC complies with ISO 26262 ASIL-D and AEC-Q100 Grade 2 automotive standards.



Wudang SOM
Core Computing Board



Advantages of Wudang SOM Core Computing Board

Compared with the Huashan SOM Core Board, the Wudang C1200 SOM Core Computing Board delivers 5x higher CPU performance and 20x higher GPU performance. Its self-developed core NPU, achieves a 20% performance boost over the A1000, with native Transformer support and an ASIL-D rated MCU. Featuring a software-hardware co-optimized multi-system architecture, it enables low-cost, highly flexible cross-domain system solutions when paired with the SDK.

The systematic hardware design solution helps customers significantly shorten product development cycles and lower technical barriers.

Backed by Shanhai development toolchain, it empowers customers to rapidly port, optimize and deploy algorithm models.



Technical Specifications

Number	Module	Specification
1	CPU	10-core ARM® Cortex®-A78AE, up to 1.7GHz maximum frequency
2	MCU	6-core ARM® Cortex®-R5F, up to 1.2GHz maximum frequency, ASIL-D rated
3	GPU	ARM® Mali®-G78AE, up to 900MHz
4	DSP	HiFi5 DSP & Quad-core High-performance Vision DSP
5	ISP	4-core @600MHz, 3-exposure HDR support, up to 140dB dynamic range
6	Memory	16GB LPDDR5 (2×8GB 32-bit)
7	Storage	128GB UFS 3.1
8	Camera	12-channel HD cameras, support for>17MP resolution
9	Screen	2×DSI, 2×LVDS, 1×DP/eDP, multi-display output support
10	Codec	2-channel 4K@60fps encode/decode support
11	Ethernet	2x10 GbE+2x2.5 GE
12	PCIe	PCIe 4.0, support for 2×2 Lane and 1×4 Lane configurations
13	Peripheral Interfaces	Support:CAN-FD, LIN, FlexRay, USB 3.1, eMMC/SD, UART, SPI, OSPI, I^2C, I^3C, I2S, TDM, GPIO...
14	Sensors	Multi-sensor access support: Camera, Radar, LiDAR, GNSS/IMU, USR...
15	Process Node	7nm Automotive-grade Advanced Process
16	Board Dimensions	62*63*5.76mm

Passenger Vehicle Solutions

For the passenger vehicle market, Black Sesame Technologies provides a complete solution matrix ranging from L2 basic autonomous driving to L3+ full-scenario autonomous driving. The solutions cover core functions such as integrated driving and parking, highway NOA, and urban NOA. Leveraging the Black Sesame Technologies Wudang Series chips, the company enables cross-domain fusion of intelligent cockpit, autonomous driving, and gateway control, as well as a safety intelligent base based on the C1200 family, balancing functional safety, cost optimization, and scalable platform capabilities. This empowers automakers to achieve efficient iteration with “develop once, deploy across multiple generations.”

ADAS and AD Solutions

Black Sesame Technologies offers feature-rich and scalable ADAS and AD solutions, covering full-scenario requirements from passive safety to active driving. Based on different computing platforms and sensor configurations, the company provides the following tailor-made solutions for OEMs:

Full-scenario NOA ADAS solution with integrated intelligent interaction

- *Multimodal intelligent human-machine interaction (voice/vision/gesture)*
- *Full-scenario NOA + integrated interaction experience (dual-chip configuration supports L4 Robotaxi)*



Full-scenario NOA ADAS solution with world model integration

- *World-model-driven real-time decision making and path planning*
- *Covers urban, highway, parking and other full scenarios (dual-chip configuration supports L3 autonomous driving)*



End-to-end high-end urban NOA ADAS solution

- *End-to-end neural network architecture*
- *Supports complex urban roads and elevated scenarios*



Ultimate cost-effective urban NOA ADAS solution



Popular urban NOA ADAS solution

- *Balances practicality and economy*



Highway NOA & memory driving ADAS solution

- *Adapts to highway and memory driving scenario requirements*

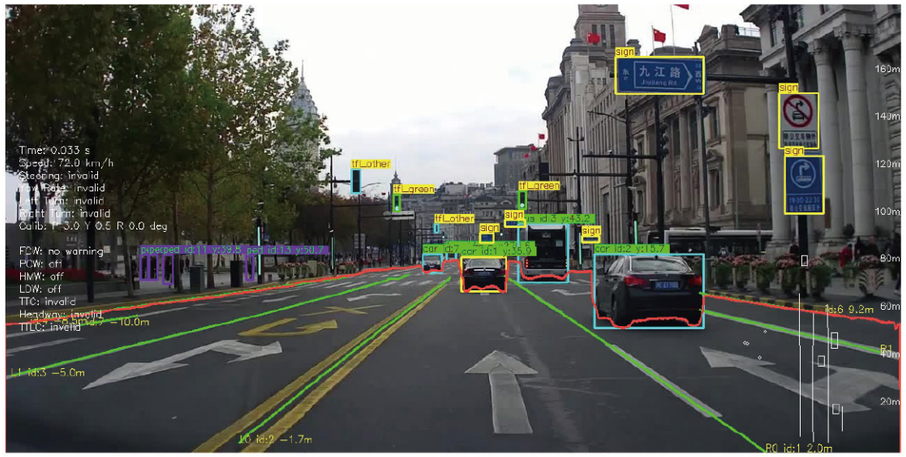


Parking & driving integrated ADAS solution

- *Hardware configuration: mono camera + four surround-view cameras*
- *Achieves L2 assisted driving and memory parking function*



ADAS Solution for various driving situations

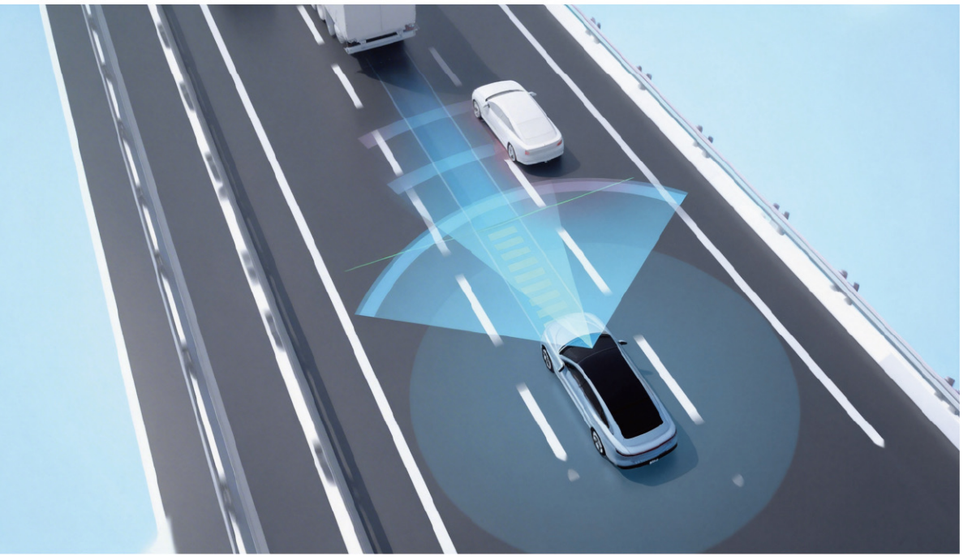


	Speed	Detection Distance	Types	Recall	Precision	Supported ADAS/ AD Functions
Pedestrian	200kph	80m	Adult / Child / Cyclist	>90%	>95%	PCW/TJA/HWA
Lane Line	200kph	120m	Single solid line/Single dashed line Solid and dashed double line/Roadside	>90%	>96%	LKA/ACC/TJA/HWA
Traffic Light	200kph	50m	Direction / Color / Flashing	>95%	>98%	TJA/HWA
Vehicle	200kph	200m	Car / Bus / Motorcycle / Truck	>98%	>99%	FCW/AEB/TJA/HWA
Traffic Sign	200kph	50m	Speed limit/No U-turn/Stop/ No entry/No overtaking	>98%	>99%	TSR /TJA/HWA
Free Driving Area	kph	m	Roadside / Vehicle / Pedestrian			LKA/TJA/HWA



Highway (including Urban Expressways) NOA

Black Sesame Technologies' highway NOA is specifically designed for closed, structured roads, suitable for scenarios such as highways and urban expressways where traffic rules are well-defined and the environment is relatively simple.



Automatic Cruise Control and Following:

The system automatically adjusts vehicle speed based on the preset speed and following distance, responding to the leading vehicle's acceleration and deceleration, enabling "feet-free" driving.

Intelligent Lane Changing and Overtaking:

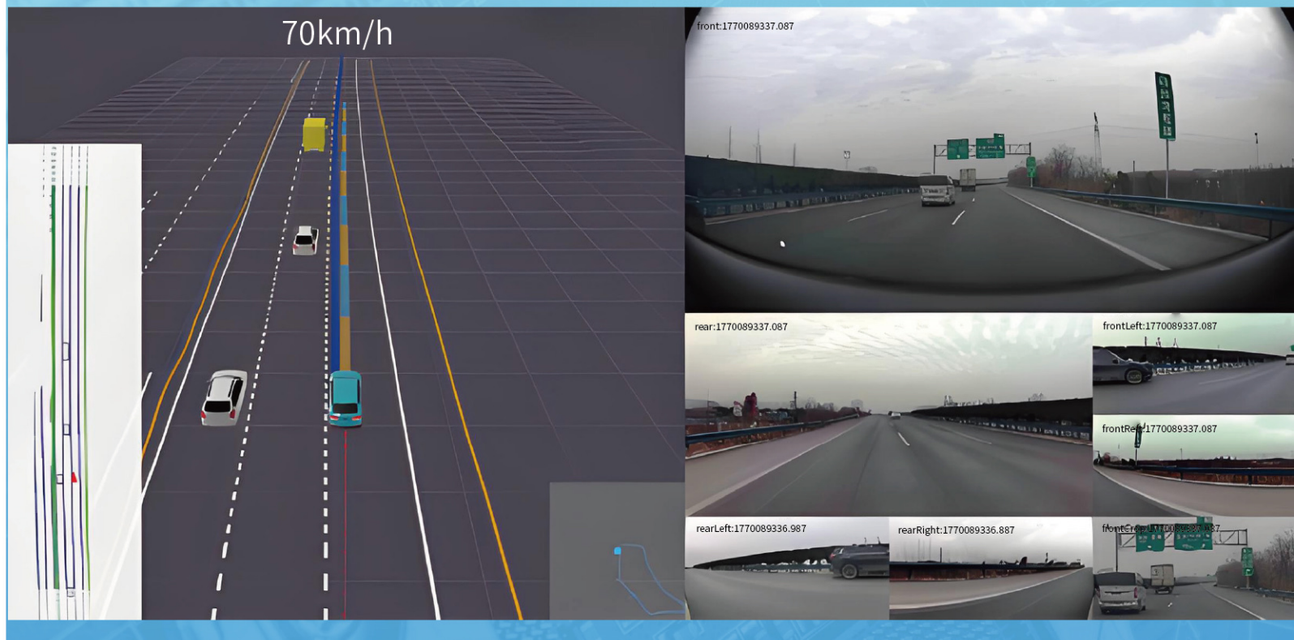
When a slow-moving vehicle is detected ahead and the adjacent lane is safe, the system automatically plans and executes a lane change to overtake, improving traffic efficiency.

Autonomous Ramp Entry and Exit:

Following the navigation route, the system identifies the ramp entrance in advance, automatically changes to the rightmost lane, and smoothly enters the ramp, or automatically merges when exiting the highway.

High-Curvature Curve Keeping:

Before entering a curve, the system automatically decelerates based on the curvature and uses a dynamic lane-keeping algorithm to adjust the steering angle in real time, ensuring the vehicle stays within the lane even on tight-radius curves.



Solution Configuration



Sensor Configuration:
6 cameras (6V) + standard definition map (SDMap) + fisheye BEV perception

Compute Specification:
about 50 TOPS

Function Level:
L2++ (Highway NOA)

Applicable Scenarios:
Highway sections, urban expressways (supports memory driving)

Mean Takeover Distance (MPI):
>100 km

Key Features:
Suitable for moderately complex scenarios; mature and reliable technical strategy ensuring driving safety and smoothness.

Urban NOA

Black Sesame Technologies Urban NOA leverages navigation data and vehicle perception systems to autonomously perform route planning and dynamic decision-making, effectively handling the extremely high complexity of open-road scenarios.



Navigating Complex Intersections:

System identifies traffic signals to stop at red lights and proceed at green lights. In unprotected left-turn scenarios, it determines the optimal timing for turning based on real-time traffic flow.

Autonomous Lane Changes and Passing:

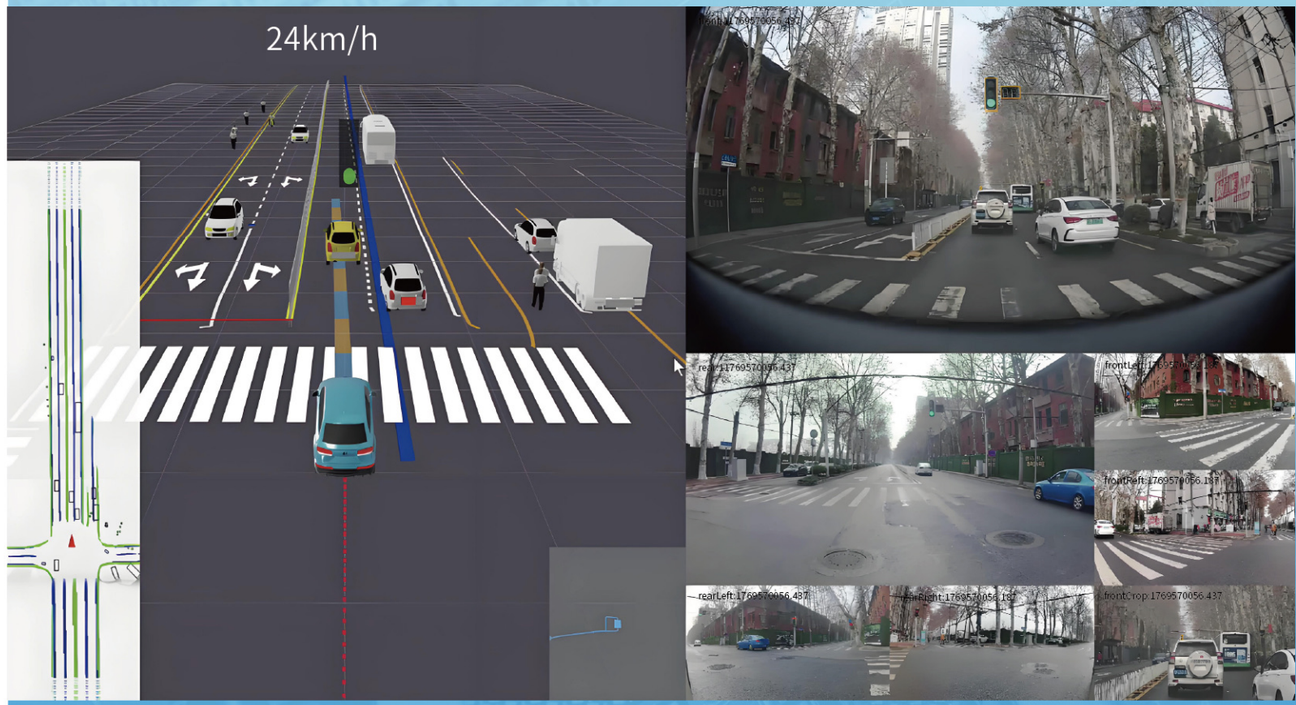
Congested traffic or when following at low speeds, the system autonomously assesses conditions in adjacent lanes to safely execute lane changes, overtake other vehicles, or merge into the main roadway.

Dynamic Obstacle Avoidance:

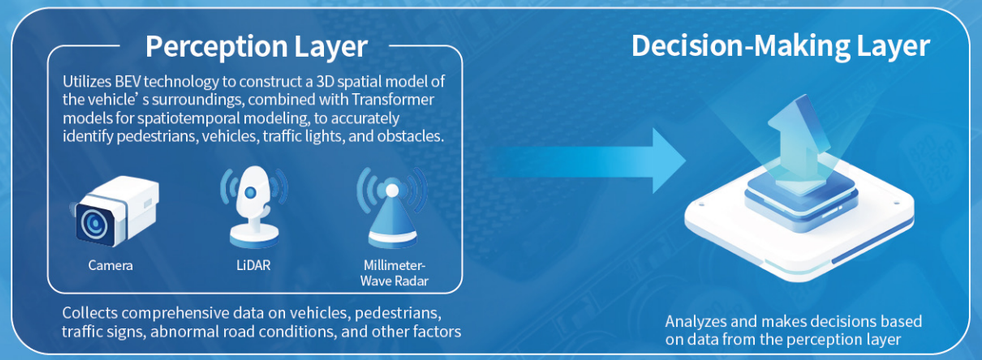
Precisely identifies and avoids pedestrians crossing the road, non-motorized vehicles (such as e-bikes), and vehicles suddenly cutting in.

Special Road Condition Handling:

Supports high-frequency urban driving maneuvers such as roundabout navigation, U-turns, passing on narrow roads, and automated parallel parking.



Technical Architecture and Implementation Principles



Computing Power and Cost Balance

As algorithm efficiency improves, urban NOA no longer relies solely on ultra-high-performance chips. Based on the Black Sesame Technologies C1200 Family chip solution, high-speed and urban NOA functions have been successfully implemented on a mid-range computing platform.

Solution Configuration

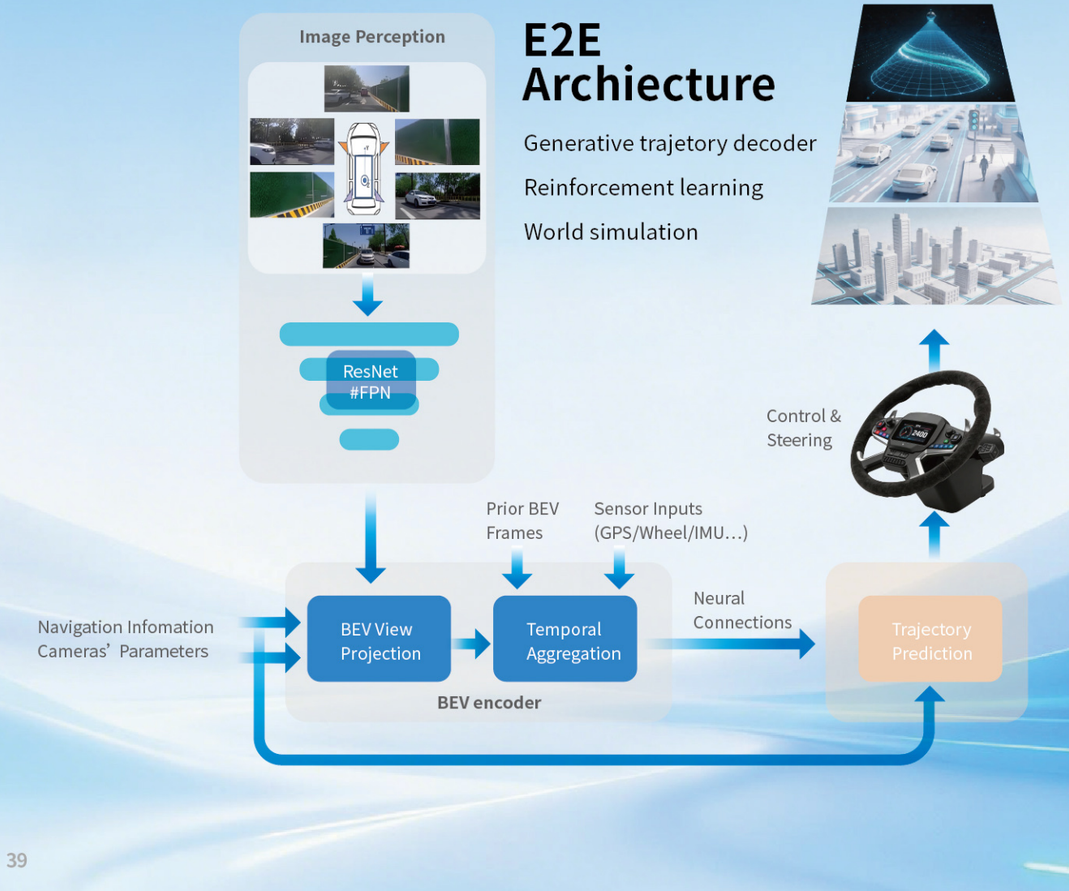
- **Sensor Configuration:** Approximately 12 cameras (12V) + LiDARs
- **Computing Power Specifications:** >500 TOPS
- **Functional Level:** L2++ (Urban Navigation Assistance)
- **Applicable Areas:** Major urban roads (including minor roads)
- **Average Mileage of Connected Roads (MPI):** Approximately 1,000 kilometers
- **Key Features:** Designed for complex urban road environments, with mature technical strategies capable of handling a wide range of road conditions.

End-to-End Solution

Black Sesame Technologies' end-to-end model technology solution is based on a unified deep learning neural network that directly feeds raw sensor data such as camera images and radar signals into the model. After processing, it directly outputs vehicle control commands, including steering wheel angle, accelerator pedal position, braking force, etc., achieving a one-stop process from environmental perception to vehicle control.

Technical Features

- **No reliance on preset rules:** Learns driving logic and etiquette autonomously by learning from massive amounts of excellent human driving data.
- **Unprotected left turns:** Judges the right timing and yields to pedestrians like an experienced driver.
- **Handling cut-in:** Smoothly performs evasive maneuvers.
- **Navigating narrow roads:** Precisely controls distance for confident passage.
- **Driving experience:** Natural and human-like behavior for greater comfort and safety.

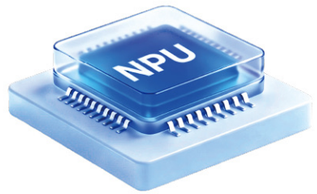


VLM Solution

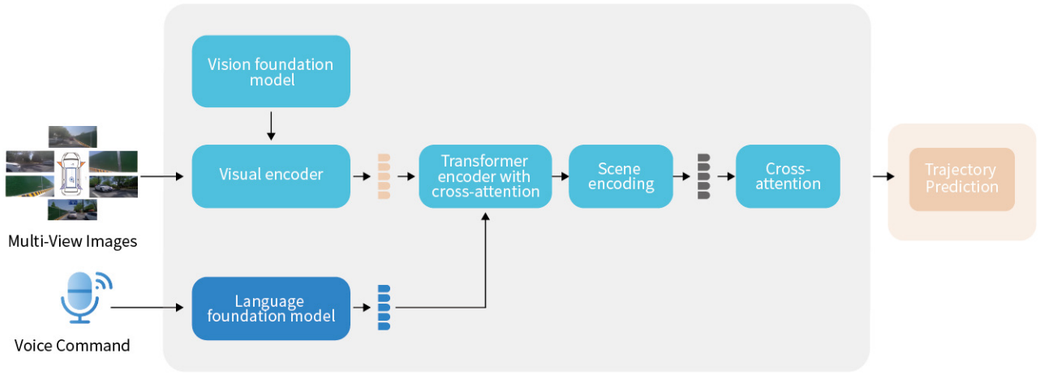
Based on Black Sesame Technologies Huashan A2000 automotive-grade high-compute chip, natively supporting Qwen3 VL model deployment, providing high-performance, low-latency, and highly reliable on-device inference capabilities for in-vehicle multimodal intelligent applications.

Technical Features

Breaking through the bottlenecks of large-scale Transformer deployment and mixed precision



- **Native support for Qwen3 VL** – meeting the requirements for visual understanding, semantic analysis, and multimodal reasoning in intelligent driving.
- **Multi-precision inference** – full-chain floating-point operation support, flexibly balancing performance and power consumption for diverse on-vehicle deployment scenarios.
- **Efficient compute foundation** – high computing power and high bandwidth ensure stable and efficient output of vision-language models in image encoding, multi-frame temporal processing, and other stages.
- **Automotive-grade high-reliability design** – providing safe and robust hardware support for perception, understanding, and decision-making functions.
- **In-house full-stack toolchain** – covering model conversion to scenario validation, shortening the time to production.



Cross-Domain Integrated Solution

Solution Overview

Black Sesame Technologies Cross-Domain Integrated Solution is a high-performance, highly integrated in-vehicle cross-domain computing solution powered by the company' s Wudang C1296 chip. Built on a 7nm automotive-grade process, the solution integrates a high-performance automotive-grade CPU, GPU, DSP, and real-time processing units. It employs a proprietary cross-domain architecture that combines hardware isolation with a Hypervisor, leveraging in-house developed NPU and ISP as core computing power. The solution offers extensive interface resources to comprehensively address diverse requirements such as sensor connectivity, vehicle body control, various display outputs, and 10-Gigabit Ethernet connectivity, thereby enabling full-domain cross-domain integration for smart cockpits, intelligent driving, and smart gateways.



CMS system



In-car streaming rear view mirror
Exterior mirror replacement

Vehicle computing



Data gateway exchange
Body/chassis algorithm
Data security management
SOA service

Auto-parking system



Fusion APA
HPA
AVP

Infotainment system



Central navigation
Audio processing
Rear entertainment



C1200 Family

L2++ Driving system



ACC/AEB
LCA
HWP
NOA

In-cabin sensing system



DMS/OMS cabin monitoring
Gesture recognition
Multimodal interaction

Intelligent headlight



New scene interaction
Intelligent headlight control

Safety information system

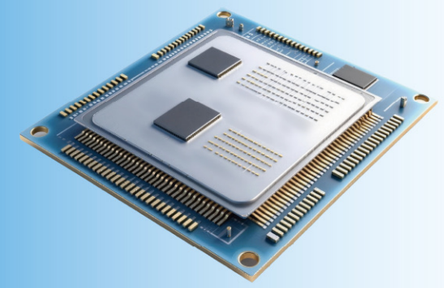


Digital dashboard
Digital control panel
AR HUD

Function Description

This cross-domain integration solution meets the diverse functional requirements of mainstream vehicle models through a single-chip architecture, covering a full range of cross-domain computing applications such as CMS (electronic rearview mirror) systems, integrated driving and parking systems, vehicle computing, infotainment systems, smart headlights, and in-cabin sensing systems. By enabling multifunctional integration, the solution further simplifies system-level design, effectively reducing the overall R&D and deployment costs for customers seeking to achieve multi-domain integration.

Increased Integration
Reduced Costs
Improved Cost-Performance Ratio



Process Advancements
Performance Improvements
Advanced Packaging

C1296

Cluster | IVI | IDP
NOA | HPA | CMS
Gateway | BT/Wifi

Cross-Domain Integration Across Mainstream Vehicle Models

Safety Intelligent Platform Solutions

Solution Overview

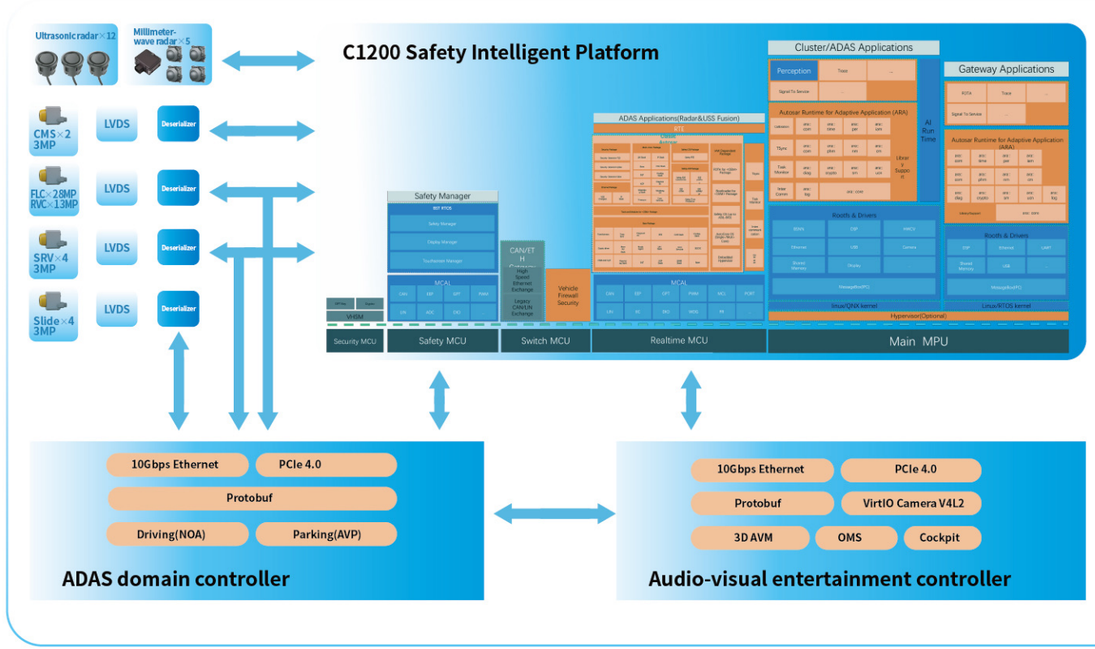
The Safety Intelligent Platform, powered by the Black Sesame Technologies Wudang C1200 family chips, provides customers with an integrated in-vehicle intelligent platform characterized by “security as the foundation, scalable computing power, and comprehensive coverage.” Through hardware-level security isolation technology, platform-based computing power expansion design, and full lifecycle compatibility optimization, this solution effectively addresses the challenges of security protection and cost control in cross-domain integration applications. It supports seamless upgrades for features such as smart cockpits and advanced driver-assistance systems across models ranging from entry-level to flagship vehicles, helping automakers achieve “develop once, reuse across multiple generations,” thereby significantly shortening R&D cycles and reducing development costs.

Extensibility of computing power

High safety level for cross-domain fusion

Balanced solution to cover all type car models





Function Description

To address the varying functional requirements of economy-class vehicles, customers can flexibly choose either the Wudang C1236 or C1296 chip as a safety and intelligence platform. This enables the single-chip integration of core vehicle safety and essential functions—including vehicle-wide data exchange, instrument cluster display, thermal management, and basic driver assistance—significantly enhancing the cost-effectiveness of core functionality integration. These core functions enable a “one-time investment, one-time development, multi-generation reuse” approach. For personalized requirements such as advanced driver assistance and high-end infotainment, external standalone controllers allow for flexible and rapid updates and iterations, balancing practicality with flexibility.

High-end Models



Audio-Visual Entertainment: Flexible Options

Multi-screen Interaction, 3A Games, Deepseek

Driver Assistance: Rapid Iteration

L2–L3 driver assistance available as an option, keeping pace with industry trends

Audio-Visual Entertainment

Driver Assistance

C1200 Safety and Intelligence Platform

Zone Actuators

Zone Actuators

Zone Actuators

Economy Models



Safety and Intelligence Platform:

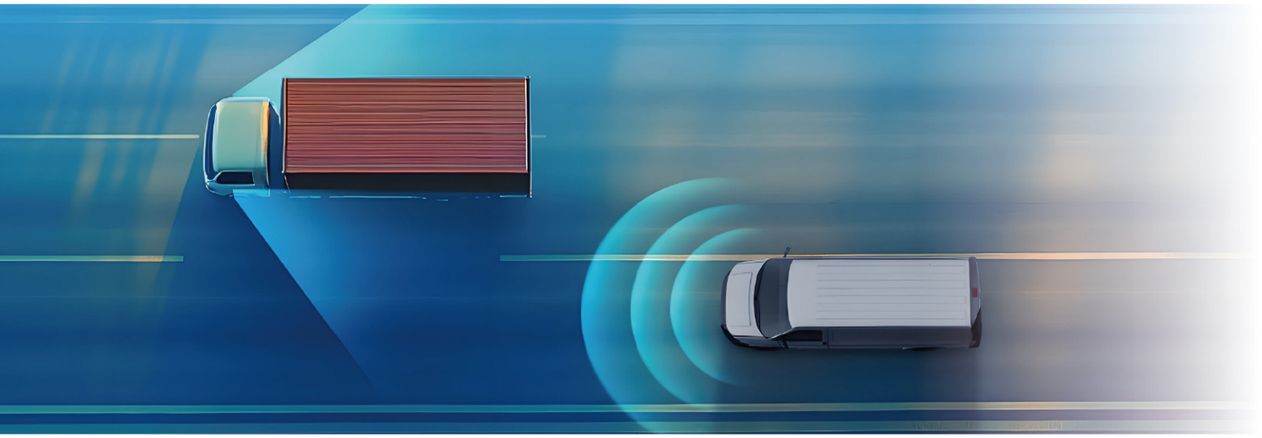
- A single hardware suite supports all configurations
- MCU Core (ASIL-D): Gateway, Vehicle Control
- CPU + GPU Core (Hardware Isolation): Safety Display (Instrument Cluster, CMS)
- BSNN: L2/L2+ Driver Assistance

Commercial Vehicle Solutions

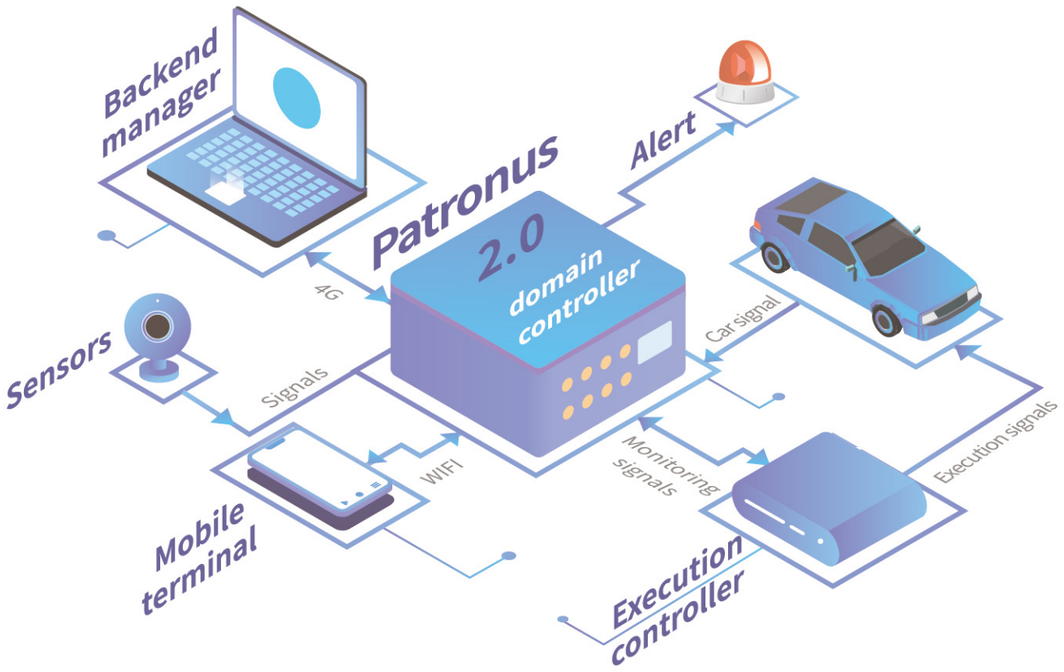
For the commercial vehicle market, Black Sesame Technologies offers a comprehensive solution centered on the Patronus 2.0 active safety system, which integrates proprietary high-performance chips, Level 2 driver-assistance features, and Next-generation Monocular Forward Perception Algorithm to ensure comprehensive driving safety. At the same time, the company has pioneered a “Technology + Insurance + Operations” business model that reduces accident risks at the source through the synergy of hardware, insurance, and risk management, thereby creating quantifiable safety value and economic benefits for customers.

Patronous 2.0 Commercial Vehicle Active Safety System

Black Sesame Technologies Patronus 2.0 Commercial Vehicle Active Safety System is an integrated aftermarket solution designed specifically for commercial vehicle scenarios. It is compatible with a wide range of vehicle types, including commercial vehicles and logistics vans. The system is powered by Black Sesame Technologies' proprietary Huashan series chips, which offer core advantages of high performance, low power consumption, and high openness, providing robust computational support to ensure the system' s stable operation.



Patronus 2.0 Architecture



System Highlights

Robust Computing Power:

Leveraging the powerful computing capabilities of the Huashan series of chips, the system supports ultra-large neural network perception algorithms, comprehensively covering a wide range of core algorithms—including DMS (Driver Monitoring System), BSD (Blind Spot Detection), and surround view—to ensure high-precision perception.

Outstanding Value for Money:

By ensuring system reliability while carefully selecting materials and optimizing structural design, we maintain cost control. As a result, our overall solution offers a significant value-for-money advantage over comparable products on the market.

Extensive interface options:

The platform integrates multiple interfaces, including multi-channel cameras, CAN, external storage, Gigabit Ethernet, 4G, Wi-Fi, USB, VGA, SPK, MIC, RS-485/232, and digital inputs. It offers outstanding adaptability to various scenarios and can meet the diverse require-ments of different commercial vehicles.

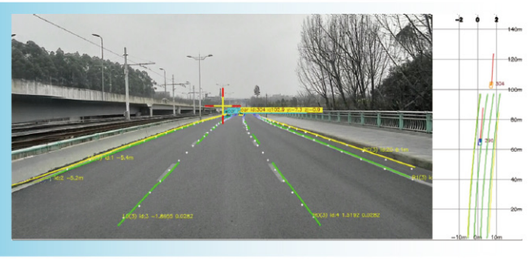
Flexible Collaboration Models:

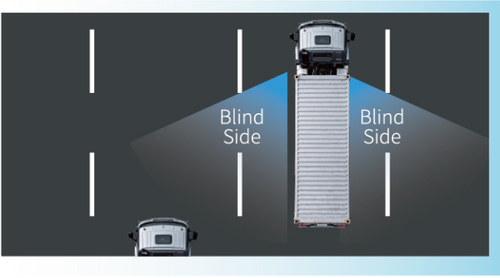
We offer a variety of collaboration models, including complete solutions comprising controllers and algorithms, as well as packages featuring chips, reference designs, and algorithms. We also provide an open collaboration model that includes chips, reference designs, and algorithm porting tools, tailored to meet the diverse needs of our customers.



Patronus 2.0 Feature Highlights

Next Generation Monocular Front-View Perception Algorithm





2

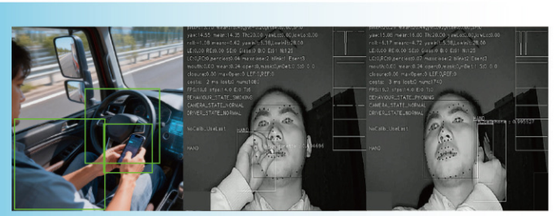
BSD (Blind Side Detection)

It realizes identification of vehicles.pedestrians and obstacles in the blind area,and is able to recognize objectives quicklyand accurately.With cooperation of the actuator, it canrealize active control functions.

In-Cabin Monitoring

Alerts the driver to dangerous driving behaviors to enhance concentration. It detects fatigue, distraction, smoking, phone calls, absence from position, hands-off-wheel, mobile phone use, and unbelted driving.

3





4

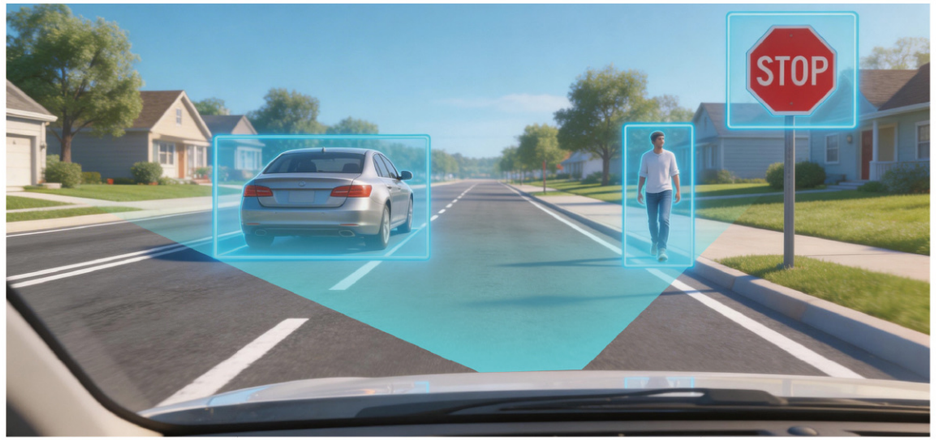
360° Surround View & Parking Assistance

Multiple high-definition fisheye cameras work in sync to generate a real-time 360° surround image of the vehicle, with freely switchable viewing angles to help drivers monitor blind spots around the car. Equipped with dynamic trajectory guidelines, it provides easy assistance for both reverse parking and parallel parking.

Next Generation Monocular Front-View Perception Algorithm

Monocular Front-View Perception Algorithm

A second-generation Transformer-based system designed for commercial vehicles. It outputs accurate 3D data for vehicles, pedestrians, and lane lines, and supports AEB, ACC, and other ADAS functions. The system offers wide FOV, long-range detection, and low-latency performance.



Key Advantages:

Advanced Transformer Architecture:
Compatible with 2MP front cameras, it outputs 3D target and lane data directly.

Comprehensive Function Support:
Enables AEB, ACC, IACC, LKA and meets China's latest AEB standards.

Superior Detection:
100° horizontal FOV, >150m vehicle & >80m pedestrian range, excels in cross-traffic.

Strong Scenario Adaptation:
Robust 3D perception for slopes, curves, bumps, and unclear lane markings.

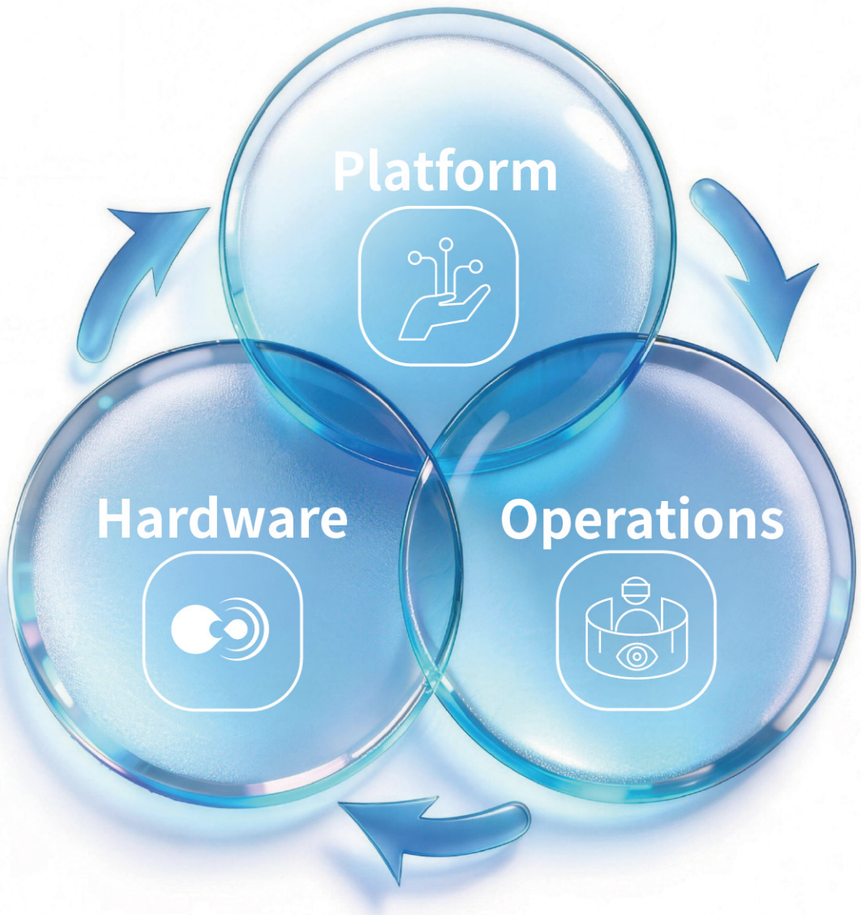
Efficient Operation:
Multi-frame fusion and self-calibration ensure stable, low-resource output with ~120ms latency.

Rich Object Recognition:
Detects vehicles, pedestrians, two-wheelers, cones, lane lines, curbs, and drivable areas.

Black Sesame Technologies Commercial Vehicle + Insurance New Model

Model Overview

Black Sesame Technologies has pioneered a new business model that integrates “technology, insurance, and operations.” By partnering with vehicle manufacturers, autonomous driving companies, insurance providers, and risk mitigation operators, the company offers clients end-to-end solutions that encompass autonomous driving equipment, insurance services, and risk mitigation operations. Through a dual-pronged risk control approach that combines vehicle monitoring and driving behavior analysis, this model delivers quantifiable safety benefits and economic returns to transportation companies, significantly reducing property damage and personal injuries while creating tangible core value for clients.



High-performance domain control, comprehensive L2 assistance

Multi-party collaboration and proactive risk management

Reducing Risks, Benefiting Customers

Support for intelligent driving devices:

Powered by domain-controlled intelligent driving devices equipped with high-performance chips, this system supports more than a dozen Level 2 driver-assistance features, including AEB, ACC, LKA, 360-degree surround view, blind-spot monitoring, and driver monitoring, providing comprehensive protection for both vehicle safety and driver safety.

Synergistic Empowerment Through Insurance and Operations:

Adopting a collaborative model of “OEM coordination, insurer empowerment, and risk control operator management,” we drive the shift from traditional reactive safety management to proactive safety management. By identifying and mitigating potential risks from the driver's end in advance, we reduce the root causes of accidents, lower the probability of incidents, and ensure the safety of both vehicles and drivers, while effectively reducing insurance premiums. This allows customers to truly benefit from the value brought by the model.



SesameX

Multi-dimensional Embodied Intelligence Computing Platform







The Premier Partner for Robotic Commercial Deployment

Black Sesame Technologies' SesameX multi-dimensional embodied AI computing platform is the industry' s first full-stack, self-evolving platform for commercial robotics deployment that supports whole-brain intelligence. The platform offers a full range of computing modules—from commercial service (Kalos) to multi-task execution (Aura) to embodied intelligence (Liora)—helping partners achieve rapid mass-production deployment and continuous evolution.

SesameX

Multi-dimensional Embodied Intelligence Computing Platform

The Industry's First Full-Stack Robotic Computing Platform Designed for Whole-Brain Intelligence

Whole-Brain Intelligence for Deeper Scene Understanding

Cloud & Edge Collaboration

Cloud Collaboration 5G→Regional DC: RTT ~100ms latency
Edge Collaboration 5G→MEC: RTT ~20ms latency
Edge Collaboration (WiFi): RTT ~5ms latency



Right Brain · Spatial/ Coordination Domain

Responsibilities: VIO/SLAM, Stereo/Optical Flow, Spatial Understanding, NPC Trajectory Generation, Gait/Phase Coordination.

Left Brain · Logic/ Language Domain

Responsibilities: Semantics/Rules, Task Planning, Behavior Trees, Strategy Arbitration.
Shares cost maps with the Right Brain.

Cerebellum: High-Frequency Control

Hardware: MCU Processor Cluster (ASIL-B/D)
Responsibilities: 1kHz-level Command Shaping/ Auditing/Takeover.

Safety Mechanisms for Smoother Behavior Control

L5 Brain Firewall Layer
Edge privacy + encryption for attack prevention = Safeguard the robot's brain

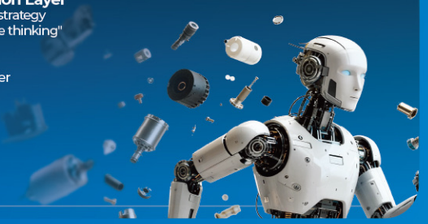
L4 Active Warning Layer
Human distance/speed/multi-perception monitoring = 100ms lead-time judgment

L3 Thought Protection Layer
Behavior boundaries, strategy review = Ensuring "safe thinking"

L2 Safety Trajectory Layer
Safety trajectory, plan de-escalation = Prevent AI from leading the robot into danger

L1 Action Review Layer
Real-time review of speed, torque, and trajectory = Actions stay within limits.

L0 Instinctive Reflection Layer
Emergency stop, power cut, torque limiting, mechanical locking = Instinctive reflexes



Unified System for More Autonomous Evolution

Perception, computing power, and intelligence integrated into a complete organism.



Fragmented Computing Task System
When executing navigation, recognition, speech, control, and other tasks simultaneously, the system suffers from high latency, slow response, and even task contentio

SoC-level heterogeneous unified architecture enables computing power collaboration.



Fragmented Perception Pathways
Subsystems operate independently, data cannot be fused, resulting in limited overall intelligence.

Middleware-layer unified model execution mechanism.



Fragmentation Between Evolution and Ontology
Robots require repeated training across different scenarios, manual parameter tuning, slow algorithm migration, and high maintenance costs.

Atomic model expression: reusable / extensible / composable.

Closed-Loop Evolution for More Efficient Global Deploymen



Development and production platforms are inconsistent, leading to high migration costs.



New requirements emerge during deployment, complicating data collection, retraining, and redeployment.



Continuous model evolution makes supporting new operators and optimizing performance difficult.



Systems lack support for ongoing intelligent upgrades with new models and capabilities.

We enable a seamless Development → Simulation → Deployment → Feedback → Retraining pipeline, embedding this closed loop into the system's core to grant it autonomous iteration and evolution capabilities.



Full-Stack Computing Platform for Robotics:

Whole-Brain AI & Multi-Dimensional Computing

System Security

SesameX Atomic Application Layer (Advanced Tasks & Atomic Capabilities)

Task Model
Semantic SLAM | Cognition & Semantics | Trajectory Planning | Dynamic Segmentation | Responsive Control | Skill Graph

Atom Model
Perception Model | Decision-Making Model | Control Model | Fusion Model

SesameX Middleware Layer (System Optimization & Acceleration)

SesameX - Toolchain
3D Parallelism | Mixed Precision | Attention Acceleration | Automatic Distillation & Quantization

SesameX - Scheduling Engine
Secure Scheduling | Multi-Task Orchestration | Quality of Service | Resource Isolation

SesameX - Runtime
Heterogeneous Scheduling | Parallel Inference | Model Sandbox | Telemetry & Self-Tuning

SesameX Computing Platform Layer (Underlying Computing & Operating System)

OS
Linux | ROS2 | SesameX RTOS

SesameX Module
Kalos | Aura | Liora

SesameX Network (Multi-Protocol Intelligent Fusion Gateway)

SesameX System Security Layer

Trustworthy Security, Exceeding the Standard

Comprehensive Security

Perception Domain

Anomaly detection, health monitoring, and data redundancy pathways for multimodal inputs (LBIST/MBIST+ECC)

Decision Domain

Transformer + CNN fusion reasoning supports multi-expert collaborative decision-making and safe rollback.

Security Domain

AI-arbitrated comprehensive monitoring subsystem.

Control Domain

Control-loop closure ensures pose balance and safe joint response

Model Domain

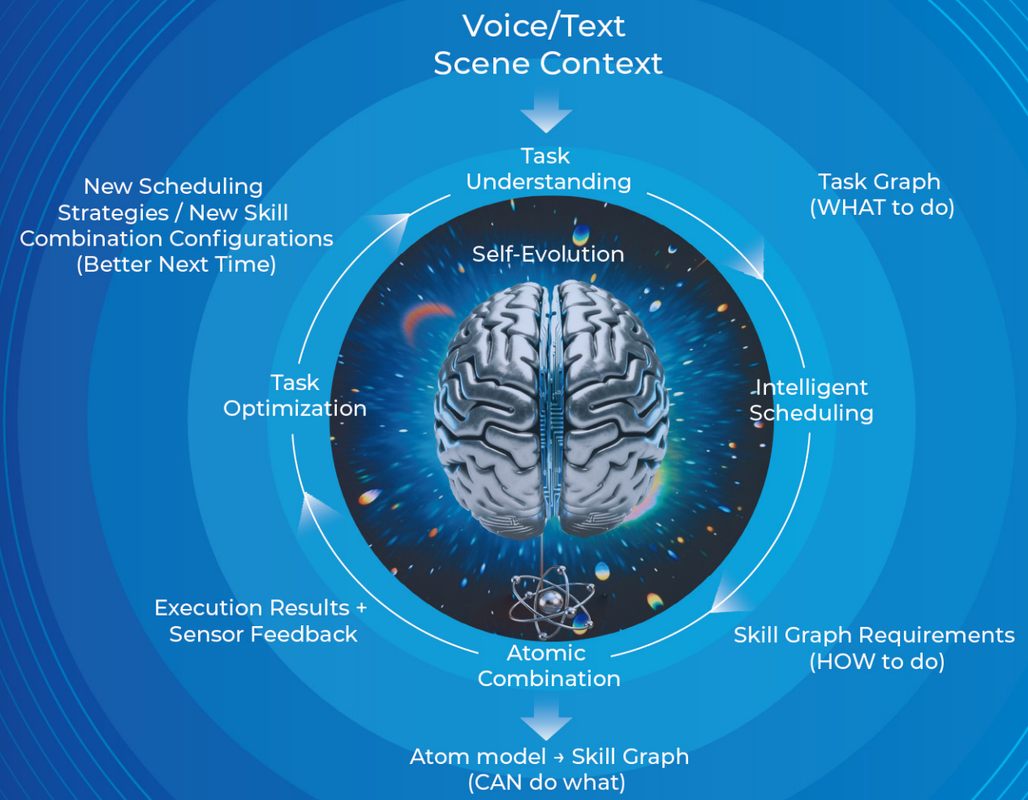
Dynamic collaboration between models (perception/planning/-control)with real-time assessment of skill conditions and recovery strategies.

End-to-End Protection

Perception	Ensuring the integrity and authenticity of input data to avoid wrong decisions caused by data drift or distortion.
State Estimation & Environmental Modeling	Onboard mapping and automatically activating the redundant perception system upon sensor failure.
Planning & Decision-Making	Scene understanding, risk analysis, and path planning, with decision-making processes interruptible and recoverable.
Motion Control	Avoiding overload, instability, and collisions, so as to guarantee safety and compliance for joints and chassis.
Execution & Interaction	Safe distance keeping in human-robot shared spaces, with collaboration or pause modes automatically triggered.

SesameX Atomic Application Layer

Decomposes complex tasks into reusable "Atomic Models," which are then dynamically assembled by Task Models.



Core Capabilities

Atomic Skill Library

The library includes vision, localization, fusion, planning, control, language, and multimodal skills.

Skill Graph (Task Graph)

Robot behavior is automatically generated from skill graph, rather than relying on "hard-coded workflows."

Model Reusability

Different robots can share the same atomic models (e.g., VSLAM, object detection, trajectory generation).

Dynamic Behavior Composition

Robots can compose new task flows in real-time based on the environment, without reprogramming.

SesameX Middleware Layer

The "central neural network" of the robotic system,
transforming robot intelligence from "discrete modules" into a "unified brain."



Toolchain

Three-Dimensional Parallelism (Graph-level × Computing Unit × Data)

No queuing – Supports bottom-up, multi-dimensional parallel execution.
The system natively implements chip-level three-dimensional parallelism, ensuring the efficient operation of computing units.

Core Value:
No queuing required across multiple models, operators, and data streams,
Significantly leading in overall throughput and real-time performance.



Scheduling Engine

Full-Stack Heterogeneous Coordination

No core contention – cerebrum and cerebellum are instinctively coordinated.
The industry's unique full-stack heterogeneous scheduling system that orchestrates all XPUs simultaneously.

Core Value:
Enable whole-brain operation without resource contention or congestion,
leading to lower-latency solution.



Runtime

Self-Optimizing Runtime

Evolvable – Robots run faster and more stable over time.
A Runtime that supports "continuous self-optimization during robot operation".

Core Value:
No requirement for manual parameter tuning after deployment, with performance consistently improving over time.

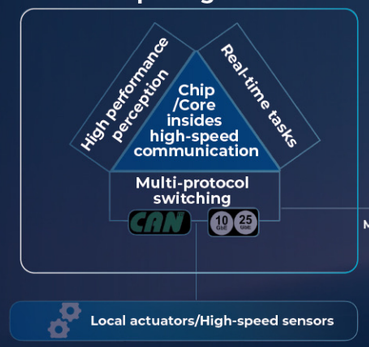
SesameX Computing Platform Layer

Ensures ecosystem compatibility, meets industrial-grade real-time requirements,
supports coordination of perception, reasoning, and control,
and addresses the computational needs of robots across diverse scenarios.

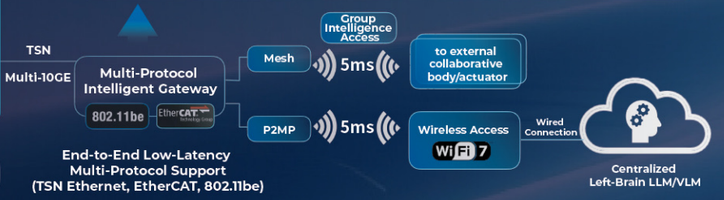
Application and Visualization Layer	Provides ROS2 applications and visualization GUI, calling underlying communication and data services.	Call ROS2 APIs (Publish/Subscribe, Services)
Communication and Middleware Layer	Manages node communication, secured transmission, and zero-copy data exchange.	Data Transmission and Security Assurance
Data Processing Layer	Performs vision/audio-video acceleration and image processing, outputs processed data in real time for upper layers.	Zero-copy shared memory for frame/ buffer transfer
Security Layer	Provides security domains, keys, and encryption capabilities to protect communication and hardware resources.	Secure API calls and isolation mechanisms
Hardware and Driver Layer	Drives SoC computing units and provides unified interfaces with high-speed memory/network capabilities.	

The OS serves as the "foundational lifecycle layer" of the entire robotic system. It supports Ubuntu, ROS 2, and SesameX-RTOS, ensuring compatibility with the general open-source development ecosystem while meeting real-time control requirements.

Computing Module



Physical Link Layer	High-Frequency Dual-Link Parallelism	MLO (5 GHz + 6 GHz), MRU Puncturing, Multi-AP Coordination
MAC Layer QoS	Control/LLM token priority	OFDMA Resource Slicing; DSCP → WMM Mapping (AC_VO/AC_VI Priority)
Transfer Layer	Low-latency reliability	HTTP/3 (QUIC) + BBR Congestion Control + FEC (N+1) + Multipath-QUIC



Network integrates different modules, computing units, and robot peripherals into a unified real-time collaborative system, while supporting both edge-side and cloud wireless communication, enabling robots with "real-time collaboration capabilities."



Module delivers a complete computing platform system: highly integrated, highly compatible, reliable in performance, agile in deployment, and streamlined in architecture. It provides robots with a production-ready hardware foundation, enabling robots of various forms to quickly advance to functional debugging and commercial testing phases at the lowest cost.



SesameX™ Kalos

Integrated Perception and Motion Control · Dedicated Platform for Service and Consumer Robots

Same CPU, more headroom released
Usable CPU compute +20% or more

Kalos NX-3000 Series is the SesameX module for service and consumer robots that completes perception, AI inference and real-time motion control on a single chip, with an evaluation carrier for out-of-box bring-up.

Product Highlights

- **DSP-optimized SLAM** — SLAM and image pre-processing run on 4× Vision DSPs, leaving the CPU to your algorithms.
- **Perception + motion, no external MCU** — Lock-step R5 cores + safety island.
- **48T NPU tuned for ViT** — ViT-Base at 13.86 FPS measured on module.
- **Zero-copy heterogeneous scheduling** — Shared on-chip memory across NPU / DSP / GPU / CPU.
- **Ubuntu + ROS2 ecosystem** — Standard and Lite tiers both in mass production.

Same CPU, 20% + more usable CPU vs. same-class

Sensor input: Camera / LiDAR / IMU / force /touch → perception

One chip for perception, AI inference & real-time motion control

CPU 8×A55	GPU Mali-450	NPU DynamAI	4×Vision DSP
headroom for your algos	graphics / parallel	48T·ViT-ready	vision / SLAM accel core

Core·DSP-based deep SLAM optimization
SLAM and image pre-processing offloaded to 4x Vision DSP, freeing the CPU entirely for your algorithms

On-chip shared memory Sesamex middleware zero-copy·heterogeneous scheduling NPU/DSP/GPU/CPU

Real-time motion & safety · on-die, no external McU

2×R5 DCLS lockstep MCU	Safety Island
µs-level hard real-time	independent functional-safety

Motors / joints / sensors → real-time direct drive (TSN + 3x CAN-FD)

Key Specifications

Spec	NX-3000-D008-M (48T · Standard)	NX-3000-D008-L (16T · Lite)
AI compute	48 TOPS INT8	16 TOPS INT8
CPU	8×A55 @1.5GHz · 32K DMIPS	8×A55 @1.2GHz · 26K DMIPS
GPU	Mali-450 MP2 @1GHz · 30 GFLOPS	
Vision DSP	(4+1)× Vision DSP @800MHz	(2+1)× Vision DSP @800MHz
Real-time safety	2×R5 DCLS lock-step + safety island	Same (lower clock)
ISP	3-core · 1.2Gpps · 120dB HDR	2-core · 0.8Gpps · 120dB HDR
Memory / Storage	8GB LPDDR4 · 32GB/s / 64GB eMMC	
Cameras	8× 1080p (2×CSI-2 via SerDes)	4× (2×CSI-2 4+4 lane)
Video codec	H.264/265/VP9/VP8 dec · 4K@60 enc	H.264 enc · 4×720p@25
High-speed I/O	PCIe Gen3 · 2×1GbE TSN · USB 3.0	
CAN-FD	3 channels	
Low-speed I/O	4×UART · 5×I2C · 2×SPI · 2×I2S · 4×PWM · GPIO	
Display	HDMI	
Typical power	15W	10W
Form factor	SO-DIMM 260-pin · 69.6×55mm · passive cooling	

Models & Evaluation Board

SesameX™ Kalos
NX-3000-D008-M (48T Standard)
in mass production

Full compute and vision DSPs — the mainstream tier for navigation and multi-sensor fusion.

SesameX™ Kalos
NX-3000-D008-L (16T Lite)
same form factor · in mass production

Software-binned lite tier for cost-sensitive volume models; see Lite column above

DX-3000-D evaluation carrier — 260-pin SODIMM socket · 2×GbE RJ45 · HDMI 1.4 + DSI 22-pin · M.2 Key M ×4 (Gen3) · 2×CSI 22-pin (D-PHY V2.1) · 40+20-pin headers (3×CAN / 8×I2C / 2×SPI / 2×UART) · USB 3.0 Hub ×4 + Type-C debug · DC 9–24V · 0–70°C



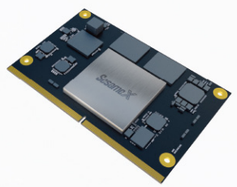
SesameX™ Aura

Cognitive-Motor Integrated General-Purpose Computing Platform for Multi-Task Robots and Next-Gen Edge AI

One SoC replaces host + MCU + safety + switch
Board area **−20%** or more

Aura Series is the heterogeneous compute module of the Black Sesame SesameX® family for robots and edge AI: the cerebrum-cerebellum fused architecture completes cognitive planning and motion control in one SoC, with an evaluation carrier and full software stack from algorithm validation to mass production.

Product Highlights



- **Cerebrum-cerebellum fusion** —— Cerebrum for cognition and planning, physically isolated cerebellum for motion control (right).
- **Safety arbitration, hard real time** —— R cores + safety island, µs-level determinism.
- **Zero-copy, deterministic networking** —— No inter-domain copies; EtherCAT master drives whole-body joints.
- **Rich machine-vision I/O** —— 12× 1080p or 4× 4K direct-attach, on-module ISP output.

'Cerebrum / cerebellum' is a role split, many-in-one: cerebrum plans & cognizes, cerebellum controls motion

Sensor input: Camera / LiDAR / IMU / force / touch → multimodal capture

Cerebrum · think (cognition / decision / planning / LLM)

CPU 8×A78AE | **GPU 8×G78AE** | **NPU DynamAI** | **DSP Vision**

BST global shared memory/ zero-copy cross-domain data mapped directly, not copied

Cerebellum · move (control / stability)
2×A78AE+1×G78AE · isolated domain
control & state estimation

Safety arbiter · real-time fallback
R-core + safety island · µs hard real-time
isolated safety domain: motion exec & priority arbitration

EtherCAT master / high-speed Ethernet → whole-body multi-joint drive (RT core + IgH stack)

Key Specifications

Spec	NX-5000-D016-M (16GB · Standard)	NX-5000-D008-L (8GB · Lite)
AI compute	70 TOPS (INT8)	65 TOPS
CPU	8XA78AE @1.7GHz · 150K DMIPS	
GPU	8×Mali-G78AE · 460+ GFLOPS	4xMal-G78AE
Cerebellum domain	2×A78AE + 1×G78AE	None (Lite)
Motion MCU	6×R5F DCLS · 42K+ DMIPS	
Memory / Storage	16GB LPDDR5 (51.2GB/s) · 64GB UFS	8GB LPDDR5 · 64GB UFS
ISP	4-core @600MHz · 120dB HDR · 12 concurrent	
Cameras	3×MIPI CSI-2 · 12× 1080p or 4× 4K	
Display	2×MIPI DSI TX (4-lane/port)	
Networking	2×10GbE + 2×1/2.5GbE (all TSN)	
High-speed I/O	PCIe Gen4 · 4×USB 3.1	
Low-speed I/O	8×UART · 6×I2C · 2×SPI · 2×I2S · 2×I3C · 8×PWM · 5×ADC	
CAN-FD	1× Safety CAN-FD + 8× CAN-FD	
Form factor	MXM 314-pin · 82×54 mm	
Cooling / Power	Fan-cooled · 30~50W TDP	

Models & Evaluation Board

SesameX™ Aura
NX-5000-D016-M (16GB Standard)
in mass production

Modular plug-in with rich networking and safety I/O; DX-5000-D carrier · 120×113mm
2×USB 3.1 Type-A + 2×Type-C + Micro-B · 2×RJ45 · 1×HDMI · M.2 Key M + Key E · MIPI CSI / DSI · USB Micro-B (debug)

SesameX™ Aura
NX-5000-D008-L (8GB Lite)
same form factor

Same software stack and carrier as Standard, for cost-sensitive models; see Lite column above
For designs that need no independent cerebellum sub-domain.



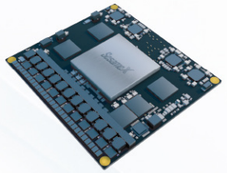
SesameX™ Liora

Embodied Brain · Near-Memory Computing · All-Round Computing Platform for Humanoid and Embodied Robots

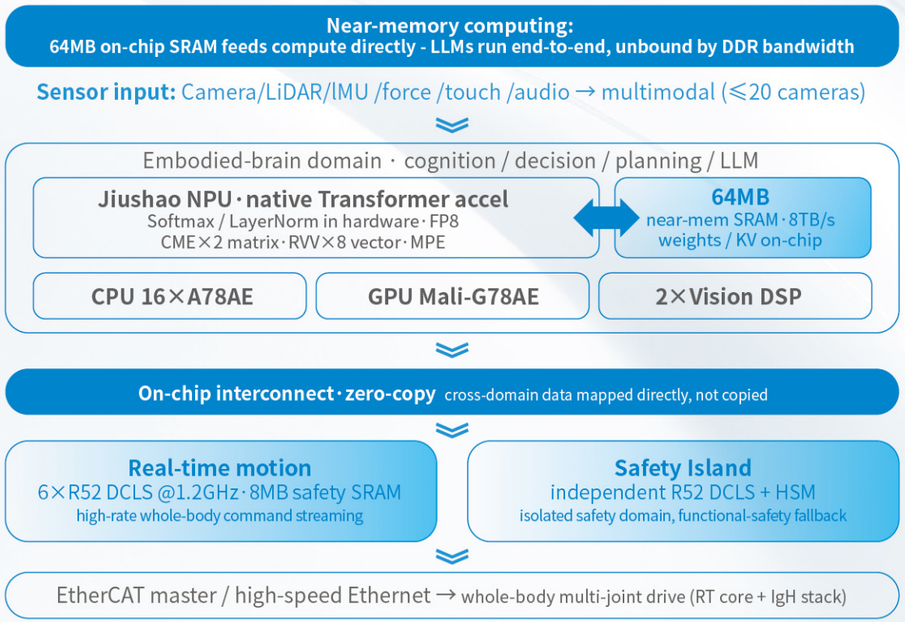
Near-memory · weights / KV stay on-chip
Effective 700 TOPS

Liora NX-7000 is the flagship compute module of the Black Sesame SesameX family for humanoid and embodied robots: native Transformer acceleration and near-memory computing run large models end-to-end on device — cognition, decision-making and

Product Highlights



- **Native Transformer acceleration** — Hardware Softmax/LayerNorm; SFU:MAC 1:1 — nonlinear ops keep pace with matmul (vs ~1:8 typical).
- **Near-memory computing** — 64MB SRAM, 50–70% less DDR traffic.
- **Cognition & motion on one chip** — 16×A78AE + 6×R52 DCLS.
- **Drop-in on T4000 baseboards (Rev-B)** — Compatible with Jetson Thor T4000 carriers, plug and play.
- **Embodied model stack** — VLM/VLA multi-model parallel inference.



Key Specifications

Spec	NX-7000-B048-U / NX-7000-B096-U · (48/96GB)
AI compute (effective)	700 TOPS
CPU	16×A78AE @1.7GHz · 352K DMIPS
Near-memory SRAM	64MB · 8TB/s · 42ns latency (weights / KV on-chip)
Transformer	Native · SFU:MAC=1:1 · FlashAttention · INT4/INT8/FP8/FP16 · INT4 / INT8 / FP8 / FP16
Motion MCU	6×R52 DCLS @1.2GHz · 60K+ DMIPS · 8MB safety SRAM
GPU / Vision DSP	2×Mali-G78AE @900MHz · 115 GFLOPS / 2× Cadence Q8 · 128 GFMACs
Memory / Storage	48 / 96GB LPDDR5 · 128GB UFS
ISP	NeuralIQ · 2× pipeline · 3.6 GPixel/s · 150dB HDR
Cameras	4×CSI-2 · 16 lanes (up to 20 cameras)
Video codec	4×4K@60 enc / 4×4K@120 dec
Networking	4×10GbE TSN + RMII real-time port · PCIe Gen4 ×8 (or 2×4) · C2C ×16
EtherCAT	Master solution (RT-domain R52 + IgH stack via RMII real-time port)
CAN-FD	6 channels + 2×WAKE
Low-speed I/O	11×I2C · 5×SPI · 5×UART · 3×I2S · 20×PWM · 6×ADC · GPIO
Display	eDP
Form factor	87×100mm · forced-air cooling
Typical power	80–120W

Models & Evaluation Board

SesameX™ Liora
700T · (flagship)

NX-7000-B048-U /
NX-7000-B096-U · 48 / 96GB
SesameX DevKit ships with the main module.

SesameX™ Liora
Compute ladder (same SoC)

200T · 32GB (NX-7000-B032-N) /
400T · 64GB (NX-7000-B064-L)
N / L / U tiers share one software stack; choose by compute and memory. MP in 27H1.

SesameX™ Full-Stack Algorithm Library

The SesameX full-stack algorithm library is delivered with modules in three tiers (Basic / Advanced / Flagship). Each tier provides replaceable representative models (e.g., YOLOv8n, EdgeSAM, Qwen3-VL, etc.), while actual selections can be flexibly swapped based on scenarios, out-of-the-box. The same platform covers up to five scenario types—from campus delivery and industrial robotic arms to quadruped robots and humanoid robots. By selecting Kalos / Aura / Liora modules on demand, customers can smoothly evolve from perception-for-mass-production to embodied operation.

Basic Edition · Perception for Mass Production

CNN classics | INT8 quantized for mass production

2D Detection	YOLOv8n/v5
Segmentation	YOLOv8-Seg
Localization / Stereo	ORB-SLAM3 · IGEV-RT
Classification	MobileNetV2
Voice	SenseVoice(CPU)

Advanced Edition · Embodied Cognition

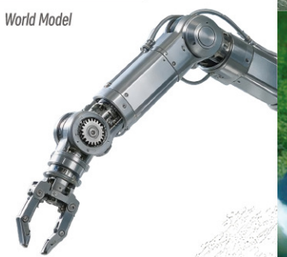
Transformer | Mixed Precision

Detection	YOLOv10/v12
Universal Segmentation	EdgeSAM (ViT)
Monocular Depth	DepthAnything v2
3D Perception	RAFT / FlashOcc
Interaction	SenseVoice (NPU)

Flagship Edition · Embodied Foundation Model

Liora Exclusive | VLA · World Model

Visual-Language VLM	Qwen3-VL-2B/4B/8B
End-to-End VLA	π0.5 / GR00T1.5
6D Pose Tracking	FoundationPose
Representation / Retrieval	DINOv2-Small · MixVPR
World Model	World Model



SesameX™ Application Scenarios

Humanoid Robot

Embodied manipulation
Full-body control

Liora + Aura

Quadruped Robot

Inspection and exploration
Complex terrain

Aura

Industrial Robotic Arm

Screw driving and assembly
Force-controlled operations

Aura

AGV Chassis

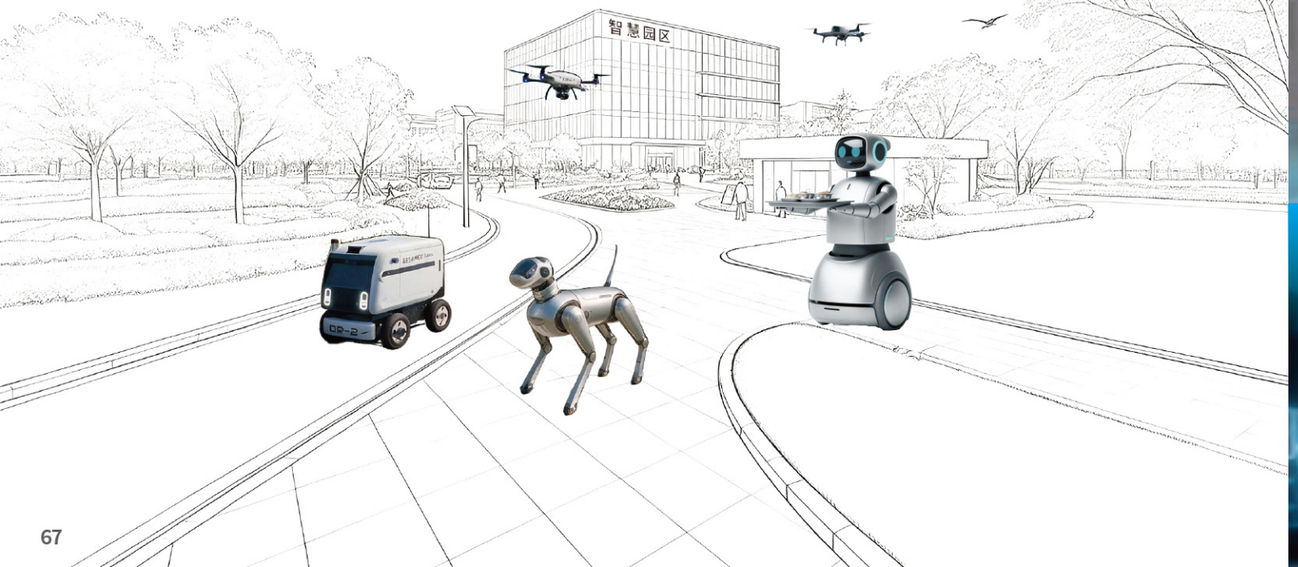
Production line material handling
Warehouse transfer

Kalos / Aura

Campus Delivery

Low-speed open-road driving
Unmanned transport

Kalos













General AI Solutions

Targeting a wide range of AI applications, Black Sesame Technologies offers diversified solutions spanning edge computing, intelligent vision, and computing acceleration. Leveraging its proprietary automotive-grade chips, the company has launched High-performance Edge Computing Unit (MEC), integrated sensing-and-computing intelligent vision terminals, and acceleration hardware designed for large language models and vehicle-infrastructure coordination. By deeply engaging with industries such as smart transportation, smart parking, and drone inspection, Black Sesame Technologies provides integrated solutions that enable low-latency, highly reliable localized intelligent decision-making and rapid deployment across various sectors.

High-performance Edge Computing Unit (MEC)

Product introduction

Focusing on edge-side applications within the “cloud-edge-device” collaborative architecture, Black Sesame Technologies leverages self-developed chips and AI algorithms to address points such as insufficient edge computing power, difficulty in upgrading intelligent services, and poor real-time performance. The result is a full-scenario, domestically developed AI computing platform that enables local data aggregation, analysis, processing, and intelligent decision-making, reducing cloud dependency while significantly lowering latency and bandwidth requirements. This approach not only meets customers’ urgent need for rapid service upgrades but also ensures data privacy and security.



The A1000 and C1200 MEC models are available as optional extras

Product	A1000 MEC	C1200 MEC
Core Positioning	Entry-level, for scenarios with moderate computing needs	Flagship, for scenarios demanding higher computing power
Core Advantages	Stable supply, high cost-effectiveness	Advanced architecture, cross-domain integration, high computing power & strong scalability
Algorithm Adaptation	General basic algorithms + scenario-customized algorithms	General basic algorithms + scenario-customized algorithms
Target Customers	Customers needing large-scale deployment, cost sensitivity, fast mature-scenario rollout	Customers requiring high-level intelligence, cross-domain integration, long-term iterative upgrades
Cost Positioning	Low-to-mid cost, for high-volume mass deployment	Mid-to-high cost, for high-end customized projects

Product Features

Powerful real-time AI chip:
With Black Sesame Technologies chip series, it achieves over 30% higher computing power utilization than traditional solutions and offers superior energy efficiency, enabling real-time processing of multi-source data at the edge.

Multi-source, heterogeneous data integration:
Equipped with various interfaces such as RJ45 and RS232, it supports the connection of multiple device types, including cameras and LiDAR sensors, enabling unified management of heterogeneous devices and aggregation of multi-source data, making it suitable for complex edge computing scenarios.

Data localization:
Data aggregation, cleansing, analysis, storage, and AI inference are performed at the edge, supporting mainstream algorithms such as BEV and DETR. There is no need to upload raw data, and decisions are made locally within milliseconds.

Information security and protection:
Features a built-in ASIL-D safety island and a Level 2 national cryptographic security module to provide hardware-level security isolation and local encryption of sensitive data.

Domestically developed and controllable:
Based on in-house automotive-grade AI chip IP and architecture, the entire stack—from chip IP to basic software—is domestically developed and controllable.

Automotive-grade reliability:
Certified to AEC-Q100 and ISO 26262 standards, supports a wide operating temperature range of -40°C to +75°C, and features high immunity to interference as well as dust, ensuring stable operation in harsh environments.



Smart Vision Terminals (cameras/inspection devices with integrated AI processing capabilities)

Based on the Black Sesame Technologies Huashan® A1000 chip, it integrates imaging, analysis, and inference into one solution, featuring low latency, low power consumption, industrial-grade reliability, and customizable/upgradable algorithms. It is suitable for applications such as rail transit, industrial inspection, and traffic management and law enforcement.

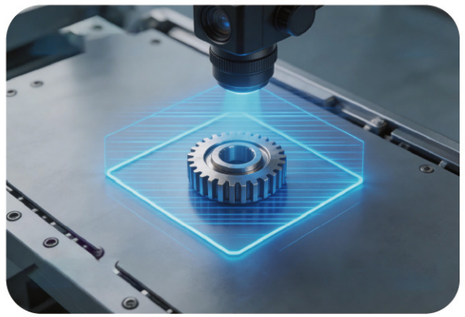
Low-latency, high-compute stereo AI camera



· **Features:**
Low latency and high reliability – target detection latency <50ms, event detection latency <60ms; flexible algorithm adaptation; with railway-specific AI algorithms, recognition accuracy improves by 10–20% over general-purpose algorithms.

· **Applications:**
Capable of railway intrusion detection and driver behavior monitoring, with expandable support for track switch status detection and track signal recognition. Flexibly adaptable to high-speed trains, conventional trains, urban rail, and other vehicle types.

High-compute industrial inspection camera



· **Features:**
Integrated sensing and computing – completes "capture → analyze → output" within 60ms; supports multi-modal fusion detection (vision + thermal imaging, etc.); operates stably from –40°C to 75°C; supports custom algorithms and transfer learning for rapid adaptation to new products and scenarios.

· **Applications:**
Capable of image capture, real-time analysis, and inference; effectively identifies industrial product defects; widely applicable to automotive, 3C electronics, photovoltaics, machining, and other industries.

Mobile law enforcement device



· **Features:**
Portable capture of specific violations.

· **Suitable for:**
Capable of detecting people, non-motorized vehicles, and specific violation types; suitable for urban mobile law enforcement scenarios.

Compute-enhanced intelligent hardware

Leveraging Black Sesame Technologies' self-developed automotive-grade chips, it build high-performance edge computing hardware that integrates an NPU neural acceleration engine along with high-performance CPU, GPU, and more. While ensuring data security and reliability, it effectively improves compute utilization and model execution efficiency, providing strong support for deploying large models at the edge.

Intelligent Connected Vehicle Accelerator Card

· Key Features: Up to 1,000 TOPS (INT8) per chip, supports 4–24 video streams + multi-sensor fusion, compatible with BEV/Transformer algorithms, TSN/CAN-FD protocol acceleration, ASIL-B safety rating, -40°C to 75°C.

· Applications: In-vehicle domain controllers, roadside intelligent units, and intelligent connected vehicle servers, enhancing AI inference and the efficiency of vehicle-to-road data transmission.

AIBOX (Edge-based Large Model Intelligent Computing Terminal)

· Core Capabilities: Built-in offline large language models (general-purpose/VLM/speech), a comprehensive agent engine (memory/planning/tool invocation), support for edge-cloud collaborative scheduling, automotive-grade safety (ASIL-D), multimodal interaction, and open-source models and tools for customization.

· Applications: Consumer-facing personal assistants, smart home systems, and creative tools; enterprise-level solutions such as on-premises AI hubs, intelligent customer service, industrial operations and maintenance, and compliance for the financial and government sectors.



Industry AI Solutions (Software + Algorithms)

V2X Edge Computing Solution

Black Sesame Technologies focuses on the roadside side of vehicle-road collaboration. Based on self-developed edge computing units powered by automotive-grade chips and a full-stack algorithm suite, it supports rapid customization of business functions and delivers an all-in-one roadside solution integrating perception, fusion, analysis, and storage. This addresses pain points such as insufficient roadside perception accuracy and high latency. The solution has been deployed at scale in multiple city smart connected vehicle demonstration projects.

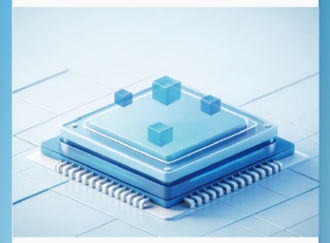
Perception-Computation-Output

Algorithm Layer



Integrate with cameras, LiDAR, millimeter-wave radar, and other sensors to collect comprehensive data on vehicles, pedestrians, traffic signs, and road anomalies

Perception Layer



Equipped with a high-computing self-developed chip featuring high-performance modules such as CPU, DSP, ISP, and NPU, it significantly accelerates the processing efficiency of sensor data.

Computing Layer



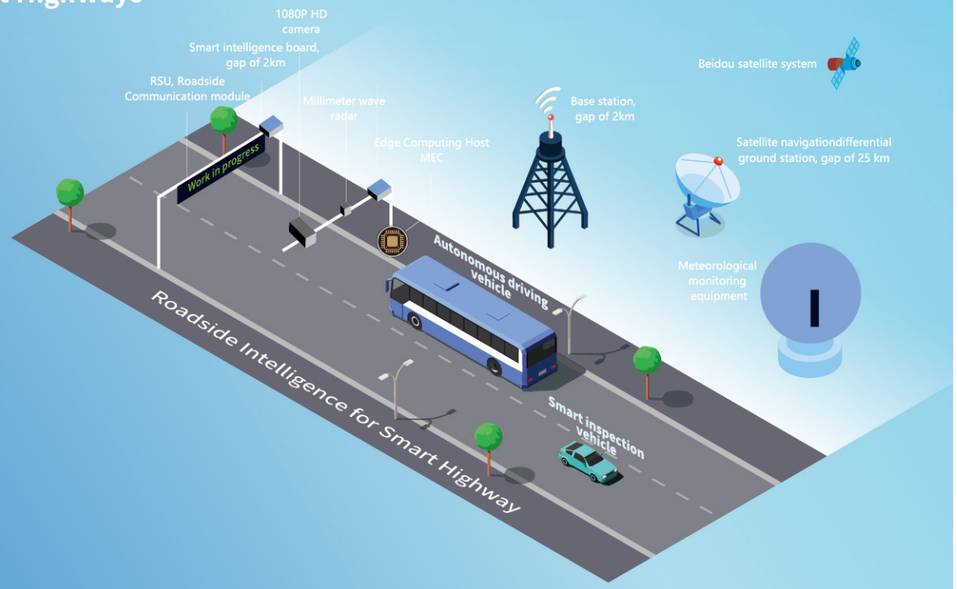
Equipped with proprietary algorithms and integrated with models such as BEV, it enables precise analysis, target recognition, and early warning, and is deeply optimized for the chip.

Roadside Edge Computing Solutions for Smart Highways

Comprehensive and precise detection: High-precision identification of vehicles, pedestrians, non-motorized vehicles, traffic lights, road surface damage, construction zones, and more under complex weather conditions.

Comprehensive traffic condition monitoring: Analyzes queue lengths, cross-sectional traffic flow, lane occupancy rates, and peak-hour lanes to assist with traffic signal timing and congestion management.

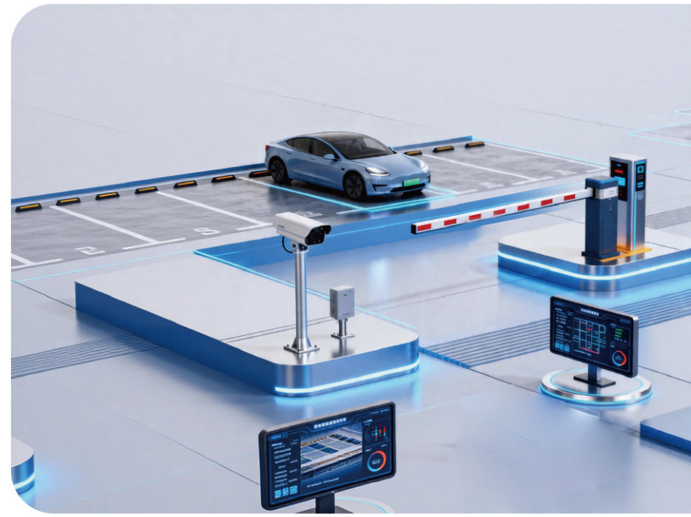
All-scenario event detection: real-time detection of collisions, wrong-way driving, red-light violations, illegal parking, obstacles, and more. alerts.



Smart Parking System

Core capabilities:
Parking guidance, reverse car finding, violation alert (line crossing / lane occupancy), fault self-diagnosis, security integration, flexible billing, and compatibility with mechanical parking garages, among others.

Suitable for:
Industrial parks, commercial complexes, transportation hubs, and residential communities.



UAV Image Processing and Intelligent Analysis Solutions

Core capabilities:
Full-stack proprietary algorithms; image enhancement (low-light, deblurring, denoising); support for traffic event recognition (congestion, illegal parking, accidents, etc., with ⩾98% accuracy), power line inspection defect detection (⩾99%), and spatiotemporal correlation analysis, among others.

Applications:
Traffic management, power line inspections, urban governance, environmental monitoring, emergency response, water conservancy inspections, etc.



Intelligent Imaging

For the consumer electronics sector, Black Sesame Technologies offers full-stack intelligent imaging solutions covering smartphones, tablets, smart glasses, and various AIoT devices. These solutions integrate portrait optimization, image enhancement, and AI imaging applications, supporting high-, mid-, and low-end platforms as well as multiple operating systems. With lightweight, end-to-end, high-quality delivery as their core strengths, these solutions help customers rapidly achieve one-stop optimization of imaging effects and bring them to mass production.

AI Imaging Full-Stack Solution

Product Line Overview

Black Sesame Technologies AI Imaging Solution focuses on visual perception and image processing technologies, provides imaging algorithm solutions of the smart device to customers. The solution has already been mass-deployed in smartphones, tablets, smart glasses, AI cameras, and other AIoT product categories. Supported by dedicated teams covering algorithms, integration, debugging, optimization, testing, and delivery, provides full-chain services to domestic and international customers.

Smartphone Imaging Solution

- Full-Scenario YUV/RAW Image Quality Solution
- Full-Scenario Portrait Solution
- Full-Scenario AI Imaging Application
- Multiple Adaptation Solutions for all the platforms
- Full Support for QC, MTK, Unisoc, and Others



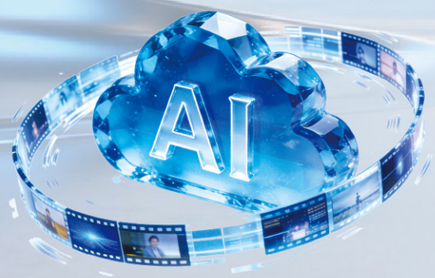


AI Glass Imaging Solution

- Full-Scenario Photo & Video Solution
- Deep Integration and Adaptation Support for Multiple ISP Platforms
- Comprehensive Coverage for hundreds of brand smartphones
- Support for iOS, Android, and Homony Systems

AIoT Embedded Imaging Solution

- Embedded Multi-Platform Adaptive Imaging Solution
- Custom Imaging Solutions for Digital Cameras and Industry Applications
- Low-Power, Low-Memory Custom Embedded Solutions
- Linux and RTOS System Support





Cloud Imaging Agent

- Break through the constraints of on-device image quality algorithms, significantly enhancing imaging performance and aesthetic experience
- Recompose images to generate storytelling videos.
- Deliver a full-pipeline, one-click photo/video creation experience for users.

Product Line Advantages

Full-Scenario Coverage

Comprehensive scenario coverage: The smart imaging full suite covers nearly all application scenarios for photo and video capture.

Breakthroughs in high-frequency scenarios: Focus on high-frequency scenarios such as portrait and image quality, delivering leading BST solutions including AI Depth and YUV/RAW IQ Solution.



Lightweight Solutions

Deep integration and adaptation for mid-to-low-end platforms and embedded ISP platforms, creating lightweight solutions that balance performance and deliver decent results.

Dedicated Lite version imaging solutions that prioritize output quality while meeting the time and memory constraints of mid-to-low-end platforms.

Full-chain integration

Comprehensive scenario coverage: The smart imaging full suite covers nearly all application scenarios for photo and video capture.

Breakthroughs in high-frequency scenarios: Focus on high-frequency scenarios such as portrait and image quality, delivering leading BST solutions including AI Depth and YUV/RAW IQ Solution.

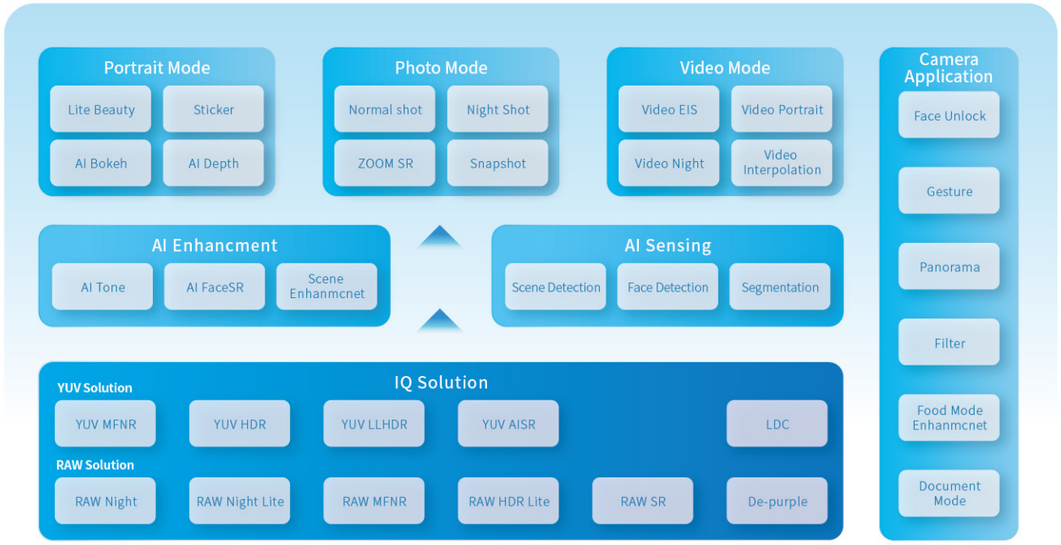
High-Quality Delivery

Established complete delivery teams covering development, integration, and evaluation.

Rapid response to customer needs and issues—initial response within 1 hour, solution proposed within 24 hours.

Customized development and debugging tailored to user requirements and desired outcomes, including targeted development and tuning.

Black Sesame Technologies Intelligent Imaging Product Matrix



BEST TECH

BEST LIFE